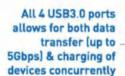




# FAST CHARGING FAST TRANSFERHEAVY-DUTY USB USE NOPOWER ADAPTER-COMPACT DESIGN-

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Supports up to 4A / 20W of total charging output

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- · Autosense technology · Plug and play

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YOUTUBE



In the blink of an eye, your smartphone is now outdated, vour laptop is obsolete, and another year has come and gone. That's the fast-moving world of tech for you. To ease the pain of all the resolutions we skipped out on

completely, our **Gadget Gift Guide** for Geeks on p25 should help. If vou've got friends that are unusually interested in things regular people aren't, there's bound to be something for them (or vourself). Since there's bound to be festivities during this aptlynamed festive period as well, you might just want to document them in image form. Despite your first instinct to use that smartphone you've got in your pocket, why not Pick Your Shots (p50) and use a proper camera instead preserving those memories in higher quality? Besides making you look more important and involved (without actually speaking to anyone), it'd help you finally start on that photography hobby you promised you'd work on when you bought a system camera, all those years ago. This issue, we've also decided to celebrate the best of tech today. First is our 28-page feature on the 200 Most Amazing Things in the World (p61), where we list the most impressively ingenious inventions on the planet. And to round it off, there's our compilation of the most beautiful **Devices of Desire** (p89) we've ever seen, because great design deserves to be recognised. Happy Holidays!



Melvin Tang, Editor / melvin.tang@haymarket.com / @melvinstuff



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www.godreamwave.com







VENTURE



**EXPLORER** 



SURVIVOR

# **B**CONENTS



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p50 Pick your shots



p89 Devices of desire



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p61



p25

**Gifts for** 

geeks

## FEATURES

- 25 Gadget gift guide

Our yearly monsterlist of the greatest gifts in the world, with ideas for every personality:

- Photo nerd Country hopper Cans fan
- Music maker Retro lover Design devotee
- Apple fan Master chef Booze hound Clock
   Star Time lord Ravenous reader Fitness
- freak Bike geek Board gamer Tech kid
- Android addict Film buff Secret Santa
- Bingewatcher ...plus subscription gifts

#### (50) Pick your shots

Your smartphone can't do everything(yet). Your system camera can still surprise you

61 The 200 most amazing things in the world today

As the year comes to a close we take a roll call of the most impressively ingenious tech on the planet



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- (8) The Hot Five
  - Apple iPad Pro
  - Microsoft Surface Book
  - Samsung Gear S2
  - Android 6.0 Marshmallow
  - HP Envy Curved AIO
- (17) I Wrote This Andy Weir

The self-published author of *The Martian* 

- App:roved Stuff-approved apps for...
  Digital sticky notes and tomb-raiding
- (20) Apps

Pac-Man bounces and mini motors race

24) Mini Meme

Retro gaming revival



\*\*\*\*\*





# MUSIC IS A LIFESTYLE

Music can create a kind of mood to make you feel the emotions. It is the reflection of feelings and the food for our soul.

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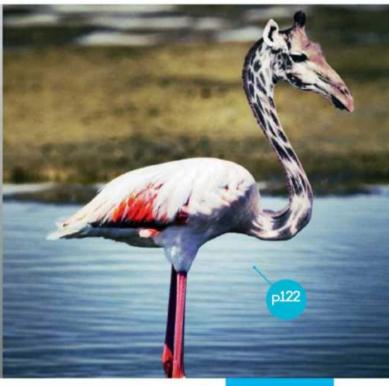
Sprint-Cass Pte Ltd Singapore Changi Airport 11, T2 & T3, Newstead Technologies, Challenger, Harvey Norman, Courts, Popular, Parisilli, Two Bros, CHt2 Technologies Pte Ltd. 37 Tannery Lane #02-03 Tannery House Singapore 347790 Vision 1 Digital, Gadget World, Bigbox, Gaincity, Mustafa Centre

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# 12.15





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Great design is the difference between an iPod and a Creative Nomad Jukebox; only one of them's in the dictionary

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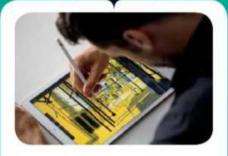
It's official: the plastic bricks are wasted on kids, so build your spaceship with pride

- 128 5-minute hacks If nothing else, at least...
  - Make a miniature planet
     Become instantly multilingual
     Create a gif-vitation
     Make a camping light
     Get Facebook immortality
     Write self-destructing emails









#### THE THIN NEW LINE Apple iPad Pro

In the run-up to Apple's September event, the thing we were certain about was an 's' update to the iPhone 6, no doubt prefaced with some graphs. What we got, however, was a bewildering flow of products and demos: a multimedia extravaganza, during which guests and engineers and doctors (and even Microsoft) trooped on and off the stage. We got the iPhone 6s and 6s Plus we were expecting, complete with snazzy 3D Touch screen, but we also saw a new version of Apple TV, Product Red and Hermes Apple Watch versions, a whole load of app and game demos and Siri making jokes. We were so enthralled in the Stuff office that we forgot to order pizza. Reigning supreme among the many announcements, though, was this: the iPad Pro. Less than a milimetre thicker than the iPad Air 2, it has a 3in larger screen: 12.9in, with 2732x2048 resolution. There's a pressure-sensitive stylus, the US\$100(\$140) Pencil, which Apple is suggesting makes the iPad Pro a tool for creatives who might currently use a Wacom graphics tablet or a Microsoft Surface 3. The Pro has an A9X chip to keep things trucking, and battery life is quoted at 10 hours. Ashotas...fingerprint-free screens from US\$800(\$1110) / apple.com/sg



#### How big?

A size hike of 3in might not sound like a revolution, but it's enough that you could fit two Air–sized screens side by side on the Pro. In fact, the OS will let you do just that, for joyous multitasking.

#### IN AUTUMN, MANY APPLES DROP



# APPLE iPHONE 6s APPLEIPHONE 6s The 's' version gets a new metalbody, new A9 chip, new 3D Touchscreen, new haptic feedback, new camera and new photo skills. Just an 'update', then.



#### **APPLE TV**

APPLE TV
Still not an actual TV,
but tvOS software
brings Siri-searchable
tellybox-orientated
apps and games. A
touchpad remote and
third-party game
controllers adds to
the awesomeness.



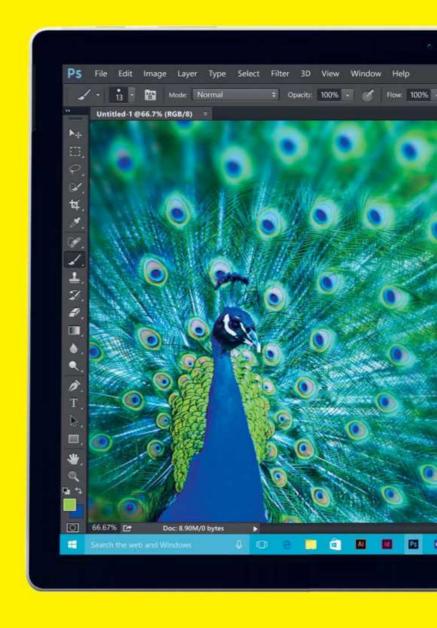


#### CORTANA'S SHINY NEW CONVERTIBLE

#### Microsoft Surface Book

It's strange to think that, despite having spent decades as one of the world's largest and most valuable tech companies. Microsoft has just made its first laptop. In the past, companies like Lenovo and HP made the screens and keys while Microsoft made what was seen and typed into and clicked on. But after a faltering start, Microsoft's Surface tablets turned out to be actually pretty good, and then with last year's Stuff-Award-winning Surface Pro 3 – really very good indeed. Which is why we're really very excited about the Surface Book. Its 267ppi, 13.5in display is sharper than a MacBook Pro Retina, and it contains the sixth-gen Intel Core processor and battery it needs to work on its own as a tablet. The keyboard, though, is no mere peripheral. It contains powerful graphics hardware and yet more battery, enabling the conjoined pair - held together by 'Muscle Wire' locks - to work for 12 hours or more. A bendy 'dynamic fulcrum' hinge lets you fold the screen back on the keyboard, and you can draw or write with precision on the screen using the Surface Pen.

Ashotas...throbbing Muscle Wire from USS1500(S2085) / microsoft.com/en-sg





















#### S2 Classic

If you're not into the minimalist chic of the Gear S2, then the S2 Classic might be for you. It has a leather strap and a knurled bezel. Contrary to intuition, however, it's actually 2mm smaller at 40mm.



#### GEAR GROWS UP SAMSUNG GEAR S2

The new S2 has a rotating bezel, it works with non-Samsung phones, and one of the models can go online without a phone at all. Are you as confused as we are by the smartwatch market? Samsung flung out several in 2013 and 2014, and none particularly stuck. But they're back with the Gear S2, and it looks good. Good in physical terms, whether the understated standard S2 or the metal-and-leather S2 Classic. It also looks good as a proposal. It's running Samsung's Tizen OS, but its app is downloadable for any Android phone. Tizen might not look as sexy as Apple's watchOS or Android Wear but the rotating bezel should make it super-easy to use. Plus it runs light: the S2's battery life is quoted at 2–3 days – less so for the S23G version, despite a larger battery. Back to the headline, then: the S2 might be the measured, capable smartwatch we've been waiting for.

Ashot as... a supersized crown \$448 (\$548 for classic) / samsung.com/sg

#### MORE SMARTWATCH NEWS



#### **Apple Watch**

A new OS version will allow apps to run without the aid of a smartphone. There'll be gold aluminium androse gold versions as well as Product Red and Hermès special editions.



#### Motorola Moto 360 Sport

The new 360 will have two sizes, but it's this rubbery Sport version that's got the geeks itchy-wristed. It has GPS and onboard storage.



#### LG Watch Urbane Luxe

Some will deride this 23-karat gold version for being ostentatious. But if you can't afford an Apple Watch Edition, it's only US\$1200(\$1665).



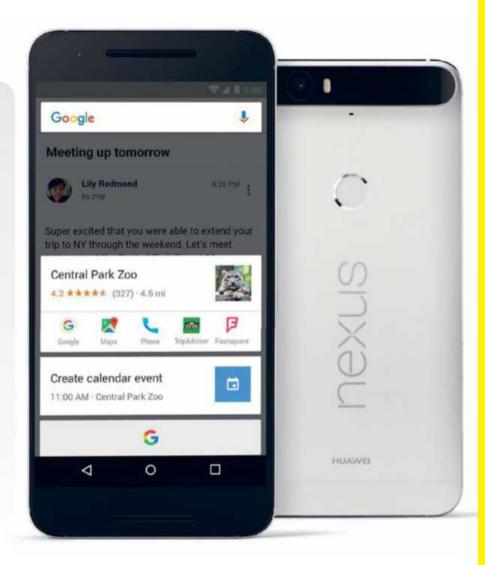


#### YOU HAVE PERMISSION TO BE AWESOMISED

#### Google Android 6.0

Amazingly enough, the revelation that the 'M' in 'Android M' is to be 'Marshmallow' isn't the most exciting bit of the new  $\mathsf{OS}$ launch. Well, it was temporarily, but as of now we're more interested in what the new OS will bring. And the answer is many things. There are mildly obvious upgrades, like homescreen rotation and the virtual plumbing for Android Pay using any device's fingerprint scanner. There are geeky love-ins, like the process of accepting or declining individual access permissions on an app-by-app basis (sounds dull, but it gives you power over the likes of Facebook so, uh, yep). Then there are things that caused a murmur: apps and their data backing up automatically to Google Drive? Hmm. But as with most OS upgrades, it'll be the things you don't see that will make a big difference. Like the death of the 'Open in...' rigmarole, or seamless in-app Chrome tabs with full security and autofill. You'll just be happier with your phone, without really knowing why.

As hot as... a horizontal homescreen on your nightstand Sfree / android.com



#### OH, THERE'S HARDWARE ALRIGHT



#### **NEXUS 5X**

LG's latest Android task was a follow-up to the Nexus 5. The specs are lower, but so is the price. So, plastic body, 5.2in 1080p screen, hexa-core Snapdragon 808. But it gets a fingerprint sensor and Marshmallow from the get-go. from US\$379(\$525)/lg.com/sg



#### **PIXEL C**

Google's new supertab has a 10in 2K screen, an Nvidia Tegra X1processor and USB-C. A funky US\$150 (\$210) keyboard dock puts this squarely in opposition to Apple's new iPad Pro, which will go on sale around the same time.

from US\$500(\$695) / pixel.google.com



#### **NEXUS 6P**

Huawei is your hardware partner for the bigger and more upmarket of the two new Nexuses. The body is aluminium, the 5.7in screen is 2K, the processor is Snapdragon 810 and the RAMis 3GB. Pretty, pretty fancy. from \$949 / huawei.com/sg



## She bangs, she bangs

Bang & Olufsen speakers are turning upon all sorts of HP kit and they're in full effect here, adding yet more width to the Envy's 34in screen.



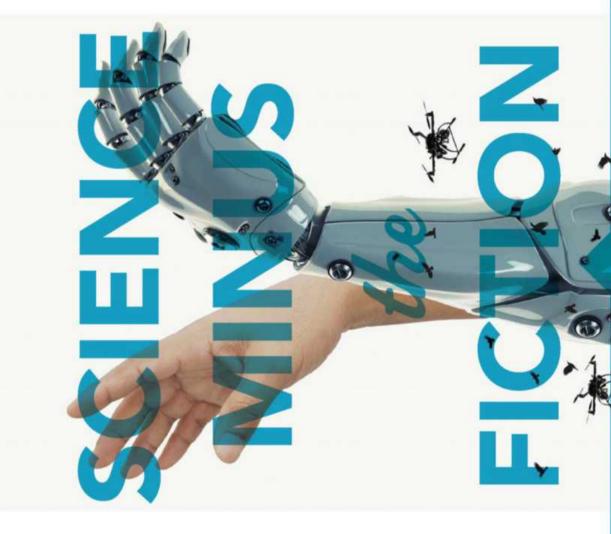


# MINESWEEPER, IMAX EDITION HP Envy Curved All-In-One

Your boss is annoyed with your bi-weekly reports being submitted in a super-wide landscape format. "Clive," she'll say. "It's great that you worked on this over the weekend, and we've all enjoyed hearing about your new PC." (There's a curious strangled noise from one of your colleagues behind you.) "That you had your choice of Core i5 or i7, 128GB SSD or 1TB hybrid drive, and that you went for the proper Nvidia GeForce graphics card over the integrated option. Fascinating. But has it occurred to you that one of the advantages of having 3440 pixels of screen width is that you can work on normal portrait documents, but side by side?" She fears change, you think to yourself as you massage your neck.

As hotas... home-made red

cinema curtains £2000(\$4290)/hp.co.uk



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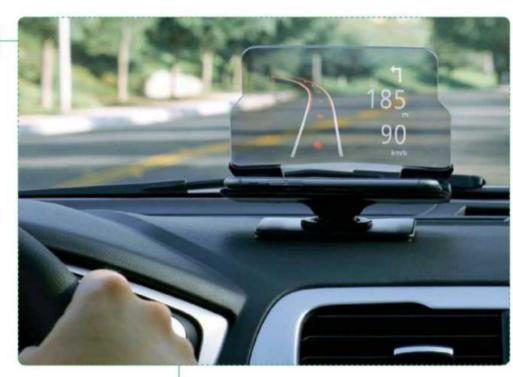
# STARTMENU

The latest startups, crowdfunded projects and plain crazy ideas



## Good reflections **HUDWAY GLASS**

The Hudway Glass is a highly affordable heads-up display for your car. Instead of adding another layer of tech - like Garmin's electronic heads-up device – it just uses ol' mother physics. You put your phone on the Glass's slip-free tray, where it reflects off the panel above. Simple. The company is coding a sat-nav app and an informatics app to use with it. (You can't, of course, just use any sat-nav app because it needs to be mirror-reversed on the phone screen.) To be honest, though, our favourite thing about this is that it forces you to put your phone away up front where it can't distract you from driving. US\$50(\$70) / hudwayglass.com



**BACK IT** 

STACK IT

SACK IT





## Hey, cool tent **SIESTA4**

Tents aren't best suited to festivals, really. No bathroom. But mainly because, once the sun comes up (ie: the time for festival goers to go to sleep), they quickly become too bright and hot. The Siesta4 has heatand light-reflecting material, plus USB-powered fans. Bit pricey and vandal-attracting for a party tent, though.

US\$315(\$440) / outbacklogic.com





# The necks big thing **TINSEL**

If you're a tech company and you want women to hate you, it's easy: just roll out a smaller, pinker version of a device you already make, and call it the Girl Edition. These wired Tinsel earphones are a more subtle sell: when not in use, they click together into a necklace. Which is pretty cool, if you like wearing the same necklace every day.

US\$150(\$210) / tinsel.me





# Layering schmayering RAVEAN C6 HEATED JACKETS

Ravean are railing against the idea that heated jackets are bulky and inefficient. Which is quite a mountain to climb. But its heated hoodie, down jacket and gloves do look pretty snazzy, with 5V or 12V heating options and phone charging from the same battery. Hefty pre-order discounts, too.

US\$90(\$125) / ravean.com



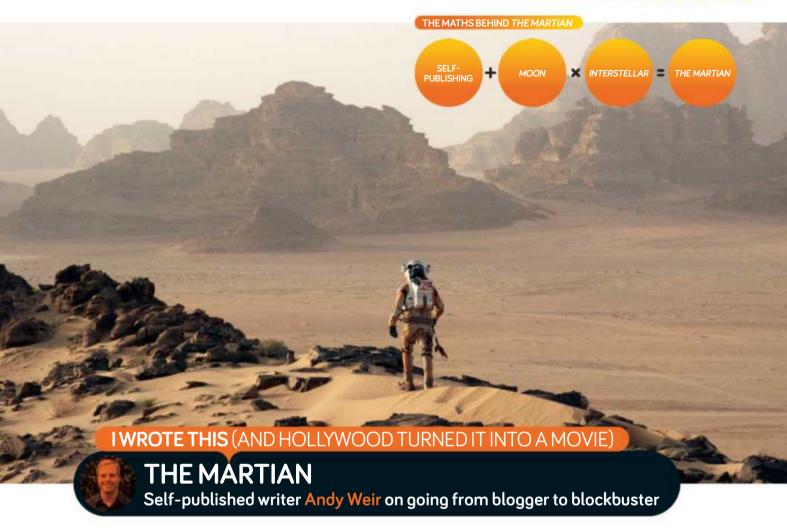


# Gram slam WEIGH TO FLY

At first glance, this might be shopping channel tat. But bear with us. It's a luggage scale that you place under your suitcase, showing a readout on your phone as you pack, including itself in the sums. It doubles as a clothes hanger and triples as a proximity alarm in case you walk away without your case. Come on! Useful, no?

£70(\$150) / weigh-to-f.ly





For 25 years I was a computer programmer, quietly sitting in a cubicle writing code, and suddenly I've been thrust into this world with movie stars and NASA people — it's been a complete upheaval of my life but it's been awesome.

I'd been poking around in my head at the idea for *The Martian* but I didn't really do anything with it for about four years. I've been a big fan of space and the space programme for my whole life, it's always been a hobby and an interest of mine, so I started off with more than a layman's knowledge because I eagerly watch any documentary on the subject. But it's not like I researched everything in advance — I did that as I wrote it.

My brand of self-publishing was just posting things for free on my website, and I'd accumulated a mailing list of about 3000 hardcore science nerds – just like me – over 10 years of writing science-fiction stories. So when I got to a part where I needed to know how ion thruster engines worked, I'd do the research, post that part of the story and then get feedback from

the mailing list. There's a guy on the list who works as a reactor technician and he emailed me information about radiation; another guy's a chemistry professor and he told me l'd got some of the science wrong in one of the chapters. It was like having 3000 fact checkers — I called them beta readers.

The hardest part was explaining all the scientific stuff to the reader

without it sounding like an encyclopaedia — that's why Mark is a smartass and uses all that gallows humour. I'm also a light-hearted guy, so two or three jokes per page keeps pulling the reader through.

I didn't want the reader to be too heavily focused on the date. I wanted it to seem like it was true but at the same time I wanted it to feel like it was happening now, so filter down to me from him that he was paying a lot of attention to accuracy.

I haven't seen the film yet, but the trailer matches what I had in my head very, very closely, especially the video that shows Matt Damon talking to the psychiatrist. He has nailed the character — it's perfect. The Hab, where the astronauts live while on Mars, is exactly the



# "MATT DAMON HAS NAILED THE CHARACTER - IT'S PERFECT"

I mentioned things like Wikipedia early on in the story to make it feel contemporary.

20th Century Fox got advisors at NASA and its Jet Propulsion Laboratory to keep things realistic for the movie. Ridley Scott [the film's director] cares a lot about scientific accuracy, which is great, because that was a priority of mine but it wasn't necessarily going to be a priority of his. I could tell from the deeply detailed scientific questions that would

way I imagined it. The spacesuits are more sci-fi than I had in mind but I think they look awesome. Hermes, the ship they take to and from Mars, looks totally different to how I pictured it, but I never really described it in the book so that's understandable — and I think it looks great.

NASA is very happy with the book and they're really excited about the movie. I think they see it as a way to hopefully re-engage the population in space travel.

# SONY



# **HIGH-RESOLUTION AUDIO** FRONT RUNNERS

Sony is geared to step up their game, with product and technology developments that focus on delivering immersive Hi-Res Audio experience to everyone. The latest additions to this line-up bring hi-res quality on the go, taking audio performances to a whole new level!

All set to meet the new Walkman® NW-ZX100 and Triple Balanced Armature In-Ear Headphones XBA-300AP?

# IN PURSUIT OF PERFECTION

**TOP 8 REASONS YOU WANT** THE WALKMAN® NW-ZX100

#### SONIC PURIST

Hi-res tracks play through Sony's S-Master HX™ digital amplifier technology for pristine and precise sound purity.

#### WIRELESS WONDER

Why settle for the standard Bluetooth® bitrate of 328kbps? Sony's LDAC™ codec transmits up to 3x more data for a richer wireless listening experience.

#### MUSIC UPGRADE

DSEE HX™ auto upscales compressed digital music, restoring detail to bring your music beyond CD quality. Even non hi-res files sound great.

#### **BEST IN CLASS**

Premium build components under the high-rigidity aluminium frame include high-purity lead-free solder and a copper-filled circuit board, for minimum impedance, maximum clarity.





BRASS SOUND PATH & RIGID MAGNESIUM CASING

Reduces resonance and cuts distortion, for clearer and more accurate sound

TRIPLE BALANCED ARMATURE – WIDEBAND 5HZ TO 40KHZ RANGE

Features Full-range, Woofer and HD Super Tweeter to boost all-round audio quality, from deep bass to bright high sound ranges



# 1 MORE REASON WORTH A LISTEN

ENGINEERED TO IMPRESS

Fancy even more hi-res performance with your Walkman® NW-ZX100? Sony hears you. Their new Triple Balanced Armature In-Ear Headphones XBA-300AP is compact and lightweight, giving you a comfortable in-ear fit. Its unprecedented quality complements the player, where impressive audio engineering delivers a truly definitive listening experience.

#### **ADD A SILENCER**

Plug in MDR-NW750N Digital Noise Cancelling In-Ear Headphones (sold separately) to mute all distractions so it's just you and your tunes.

#### **HEAD TURNER**

Just look at it. The sleek silver finish and clean lines ooze tech appeal. So while the NW-ZX100 fits easily into your pocket, you're likely to take it out every now and again. Just because.

#### PLENTY OF PLAYBACK

The battery runs 45 hours of hi-res playback on a single charge. (And even longer for lower file types.)

#### **HOLDS IT ALL**

128GB of in-built storage holds up to 1,700 hi-res audio files.
There's also a micro SD card slot to hold even more.

# **VAPPS**

#### This month's mobile must-downloads



















#### 1 Mini Motor Racing WRT

#### \$free / iOS, Android

Ah, *Micro Machines*, how fondly we remember thee! Although, looking back at screenshots from the '90s, you were a bit rubbish. We'll take this modern top-down racer instead, even with its freemium nonsense.

#### 2 AmpMe

#### \$free / iOS, Android

Here's an intriguing idea. AmpMe lets you group together the tinny speakers on several smartphones to make one synced tinny cacophany. It only works with SoundCloud; more services to follow.

#### 3 BlockQuest

#### \$free / iOS, Android

A familiar graphics style — Crossy Road, anyone? — doesn't detract from this being a madcap RPGer. Not one for turn-based strategists, though: you're moving and puzzlesolving against the clock.

#### 4 Mozilla Firefox

#### \$free / Android

The latest Firefox for Android adds a couple of niceties like improved tabs and bookmark management as well as multi-platform sync. In the next update, we're promised unrivalled privacy settings.

......

#### 5 Pac-Man Bounce

#### \$free / iOS, Android

Our beloved pixel-muncher is kind of borrowed for this only slightly *Pac-Man* puzzler. Align the bounce pads to make him change direction, clearing each level of stars while avoiding mishaps and miscreants.

#### 6 Steller

#### \$free / iOS

If lobbing a bunch of photos onto Facebook doesn't feel like enough narrative of your trip, Steller is an app that lets you quickly create an onscreen photobook. The new version is streamlined and tweaked.

#### 7 Murder

#### \$free / iOS, Android

We're looking forward to playing this cyberpunky point—and—click adventure. It's set in Tokyo so we should probably stop pronouncing it 'moider' like we're some kind of noirish New York detective. Moider.

#### 8 Google Keep \$free / iOS

Imagine 'Wait for iOS version' was a to-do list item in our Android phone's Google Keep app. And now imagine us prodding the check box... on an iOS device! Done. (Why do we have two phones?)

#### 9 Dead Zone: Zombie War Deluxe

#### \$free / Android

You're going to have to be an awfully big fan of zombie games to endure the painfully translated text of this undead-flummoxing strategy romp.

#### 3 OF THE BEST

#### BACK 2 SKOOL

#### **EASYBIB**

#### \$free / iOS, Android

If your teacher demands references, then this app will auto-generate them from the ISBN or barcode of the book you copied all the bits from.

#### PERIODIC TABLE \$free / Android

When we were young, the Periodic Table was a puzzle to be solved. Nowadays, it gives up its atomic secrets with a tap.

#### RE: SHAKESPEARE

#### \$free /

Android
Samsung
and the Royal
Shakespeare
Company have
teamed up for
this upbeat,
contemporary
workshop app.







Tosh Zhang





Official Channels







King





Organised by Contineo Media

Wang Weiliang











Official Broadcaster









Official Online Partner

Official Media television











Held in conjunction with





DWC



# App:roved



#### Sage Solitaire

devoured a billion hours of your time on ancient PCs and rethinks of poker/solitaire mash-up. Further strategy comes from after successful moves, and hugely compelling. The sole IAP removes ads and provides

#### Stuff says ★★★★ \$free / iOS



**FOR** 

#### Scanbot

Important documents have a tendency to get themselves lost, so a smartphone scanner is a wise investment. Scanbot's our a wise investment. Scanbot's our current favourite. It does a great job scanning, edge-finding and auto-cropping. But buy the IAP and it gets really clever, helping you name files and anticipating where to save documents online. Even better: using character recognition, it picks out details — phone numbers, email addresses, URLs — and turns them into an actions menu for fast access.

## Stuff says \*\*\*\* Sfree (\$5.99 IAP) / Android, iOS

FOR SUPER DOODLING

#### Paper

some people. Paper used to be a simple iPad version of expensive for the rest of us, this update which now also brings Paper to iPhone — is fast and efficient, and correction for scribbled charts.

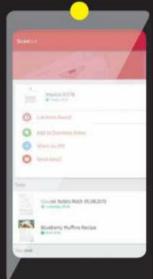
#### Stuff says ★★★★★



#### **Lara Croft Go**

#### Stuff says ★★★★









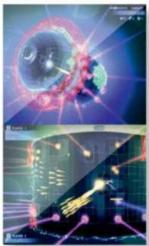




#### Drop Wizard

Harking back to classic singlescreen Taito platformers such as Bubble Bobble, Drop Wizard is also part auto-runner. You sprint left and right, blasting magic when you land, and punt dazed monsters about the place on colliding with them. It's adorable, but there's a sting in its tail with the vicious boss battles.

Stuff says \*\*\*\* \$2.98 / iOS



#### Geometry Wars 3: **Dimensions Evolved**

Few twin-stick shooters evoke the same sense of danger, panic. claustrophobia and excitement as 1982's masterful Robotron. Geometry Wars 3 does. This is a gorgeous, intense, thrilling shooter, which tests your thumbs to the limits across a range of tiny 3D worlds full of vibrant nasties to destroy.

Stuff says \*\*\*\*

\$13.87 / Android; \$12.98 / iOS

# Mini meme











# ROLLICKING RETRO REMAKES



#### Pac-Man 256

Crossy Road's devs successfully rethought Frogger and now they bring their smarts to the dot-munching maze-wanderer. He finds himself beyond the glitch in the infamous 255th level, simultaneously outrunning digital oblivion and his ghostly foes. This time at least, he has power-ups beyond pills, including a spectre-frying laser.

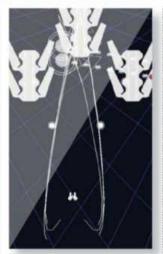
Stuff says ★★★☆ Sfree / Android, iOS



#### Panzerkampf 3

Battlezone in 1980 was one of the earliest first-person 3D shooters, finding you trundling about a sparse landscape, blowing away vector tanks. Panzerkampf 3 reboots the original, gives it Daytona-like arcade racer controls, ramps up the mayhem, speed and destruction, and then sits back, rightfully satisfied.

Stuff says ★★★★☆ \$1.28 / iOS



#### Space Invaders **Infinity Gene**

These days Space Invaders looks a bit rubbish, and Infinity Gene seemingly agrees, dispensing with the feel of the original. It quickly evolves, flinging staccato set-piece stages at you in a flurry of neon and thumping beats. Before long, you're careening through bullet hell, wondering how this got so tough.

Stuff says ★★★★☆

\$6.50 / Android; \$5.98 / iOS



#### Forget-Me-Not

Borrowing from Pac-Man, Roque and Wizard Of Wor, Forget-Me-Not plonks you in procedurally generated destructible arenas to eat flowers, grab a key and make your escape. But every level inevitably descends into a frenzied free-for-all warzone, with tiny pixelated characters blowing anything within range to smithereens.

Stuff says \*\*\*\*

\$3.99 / Android; \$2.58 / iOS



#### THE MAGIC WAND OF LIGHT PAINTING





#### **Pixelstick**

Do you know a snapper who loves the streaky lights of a long-exposure shot? If so, don't be deceived by the Pixelstick's name — this is no selfie-enabling tat. It's a light-painting tool capable of conjuring up the most incredible images. Just stick in an SD card loaded with the image of your choice and the Pixelstick's 200 RGB LEDs will display it. Then wave it around, take a long exposure and prepare to be wowed.

£330(\$710) / thepixelstick.com



#### SanDisk Ultra 200GB microSD

It's not the sexiest of gifts, but furnish your snap-happy loved one with 200GB of storage and they'll be yours forever. It can be slotted into your Android phone or tablet, plus it comes with an adaptor for a proper camera. It's class 10 certified, so ideal for shooting full HD video.

£140(\$300) / sandisk.co.uk



#### Polaroid Snap Instant Camera

Photography in 2015: 1) Take pics on your 20MP phone; 2) share them via Twittbookgram; 3) never look at them again. Polaroid wants to change all that. Take a picture with its 10MP cam and its built-in Zero Ink printer will instantly produce a real, physical 2x3in print. US\$100(\$140)/

US\$100(\$140) / polaroid.com



#### XSories Bendy

A tripod is an essential tool for any photographer, and the flexible mini tripod that is the Xsories Bendy is available in three sizes (mini for phones, standard for compact cams, big for DSLRs) Its twisty turny legs can be wrapped around anything to give you a stable shooting base. from £15(\$32) /

xsories.com

# **PHOTO NERD**



USEIT WITH..

#### **SPACEPAK CLOTHES COMPRESSION UNIT**

Get a bonus luggage upgrade with these air-vent-equipped packing aids, which compress to leave more room for gadgets. £40(\$86) / bearandbear.com



# COUNTRY HOPPER

#### ONE

#### Tooletries Bathroom Travel Case

If it wasn't likely to cost us thousands in luggage fees, we'd like our suitcase to be shaped like a giant toolkit. But as that's impractical we'll settle for this hardshell washbag, which protects its contents from being crushed and has a waterproof lining to prevent any aftershave disasters.

£20(\$43) / thefowndry.com

#### **TWO**

#### Xoo Charging Belt

Travel tech doesn't come much more stealthy than a belt with a built-in phone charger. Sure, you might have to explain it to airport security (it complies with all airline regulations), but imagine the smug feeling when your tablet starts running out of juice midway through Birdman.

US\$250(\$345) / xoo.co

#### **THREE**

#### **Brunton Revolt 9000**

Shockproof, weatherproof and big enough to hold six full smartphone charges, this super-tough battery will keep your tech juiced no matter how far you've strayed from civilisation. It comes with a 3-in-1 adaptor to make sure it's compatible with both Androids and iPhones.

£80(\$170) / brunton.com

#### **FOUR**

#### Wondercube

Ask yourself what you think it's possible to fit into the space of a single cubic inch. A phone stand? A battery booster? A memory card reader? How about a torch? Well, the Wondercube packs all of these things and more into the same space as a your dinkiest keyring.

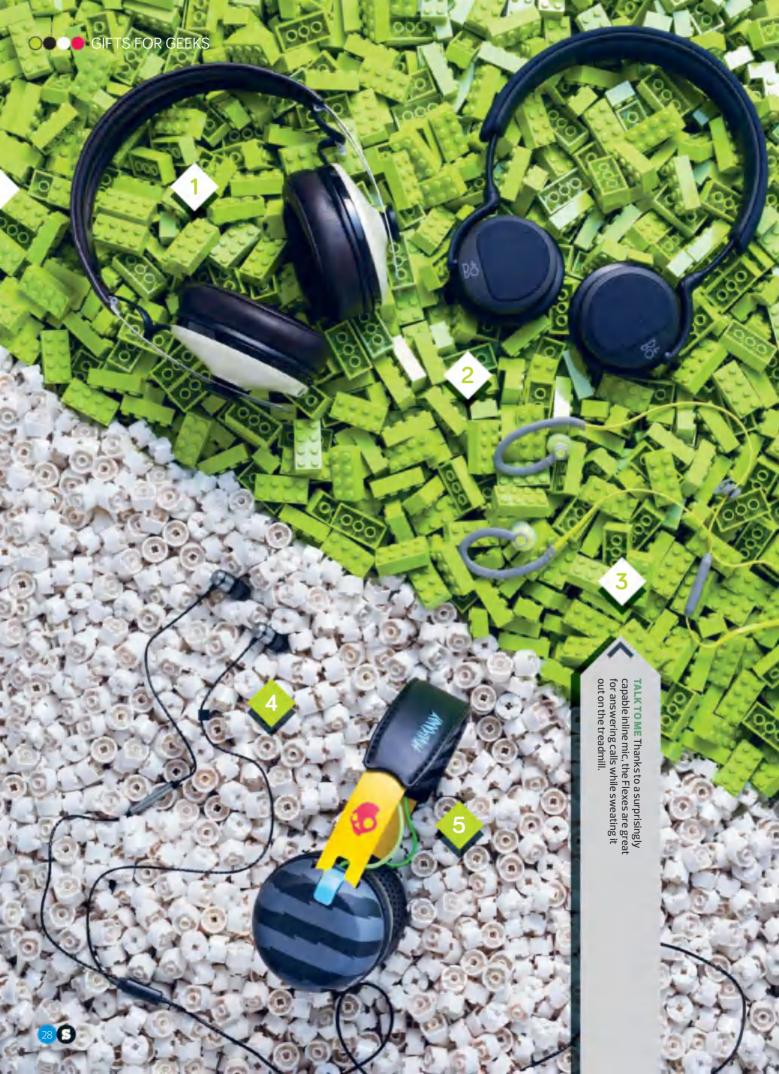
US\$55(\$75) / thewondercube.com

#### **FIVE**

#### LuminAID Inflatable Camping Light

Camping lanterns aren't just bulky space-hoggers; they love devouring batteries too. Not this sun-powered inflatable light, which packs down into pocketable form and gives an impressive 16 hours of illumination from just six hours in the sun. It will also float when the floods come. £25(\$54) / bearandbear.com





# **CANS FAN**



#### ONE

#### Sennheiser Momentum Wireless

The gift for the person you truly love, these cans combine the subtly sexy looks of the Momentum range with tech-tastic, audiophile-pleasing apt X Bluetooth. That means you look good, your music sounds better and you're not tethered to your phone. They last for 22 hours of sweet ear-lovin'.

£380(\$815) / sennheiser.com

#### TWO

#### B&O BeoPlay H2

Headphones are now inescapably objects of fashion. They say things about their wearers, such as 'I admire the style of the superstar DJ' or 'I'm refined and tasteful in a Danish way'. If the latter applies to you, you'll love the look of these. More importantly, these on-ears sound superb.

\$299 / beoplay.com

#### **THREE**

#### Soul Electronics Flex

Upgrading a jogger to some proper sports earphones doesn't have to cost a fortune. This pair has hooks to keep the buds in securely, and controls for volume and skipping tracks, because you don't want an unexpected bit of Leonard Cohen sapping their last-mile motivation.

US\$69(\$95) / soulelectronics.com

#### **FOUR**

#### SoundMagic E50S

You could buy your loved one a pair of earphones for a tenner, but if you really love them, you should stretch the budget to this fine pair. They'll work with almost any flavour of phone, they'll fit even the most misshapen of ears and they sound absolutely terrific for the money. £50(\$105) / soundmagic.com

#### FIVE

#### **Skullcandy Grind**

If you know someone who bangs on about kickflips, can-cans or toe rolls, these are the headphones for them: tough enough to handle a tour of the skate park, available in enough colours to match the most lurid of decks, and with controls on the cups for changing tracks mid-ride.

\$110 / skullcandy.com

#### KRAFTWERK IN THEIR POCKET









#### **Teenage Engineering Pocket Synths**

There's a lead synth, a bass synth and a drum machine. The bass one is the best, because it's got a picture of a submarine on it, but they all offer the same unique combination of dinky lo-fi looks — like the flimsiest calculator you ever tried to smuggle into a maths exam — and wild, glitchy, highly tweakable sounds. Your recipient will need two AAA batteries and, ideally, a beard.

£50(\$105) / teenageengineering.com



#### DigiTech Trio

Scared off the rest of the band with those 18-minute wah-wah solos? Ah, who needs backing musicians anyway? Not you, if Santa turns up with one of these fellas. The Trio generates bass and drum parts in response to your playing: pick a genre, pick a style, set the tempo... and jam. The only thing it can't do is a drummer tantrum. US\$180(\$250)/ digitech.com



#### Blackstar Fly 3

Small enough to hide under a sandwich, the Fly 3 is all anyone really needs in the way of a bedroom practice amp. It'll certainly do for a nipper who's had his or her head turned by seeing One Direction pretending to strum some chords on YouTube. It has nice clean and distorted tones, and an aux input for MP3 audio. £50(\$105)/ blackstaramps.com



#### TC Electronic Hall Of Fame Mini

This titchy stompbox has just one control, vet it offers more sounds than any other reverb pedal you've ever heard. The TonePrint app lets you load any one of TC's many superb 'verbs into it simply by holding your phone against your guitar's pickup and pressing 'Beam'. Cavernously good. £55(\$120)/ tcelectronic.com

# **MUSIC MAKER**





USE IT WITH...

#### **TIDAL HI-FI**

If their golden ears demand lossless FLAC quality, Tidal will last them 'til next summer.

US\$20(\$28) / tidal.com





# YOUR MORNING STAPLE

#### THE 21ST CENTURY UNDERWOOD





#### Qwerkywriter

Channel your inner F Scott Fitzgerald as you click-clack flowing prose in frivolous style with the Qwerky writer. Ideal for would-be smartphone novelists in need of some vintage satisfaction, this set o' keys connects wirelessly to your IThings via Bluetooth, and features a built-in tablet stand, programmable return bar and retro key caps for the perfect mobile melding of modern and mechanical.

US\$330(\$460) / qwerky writer.com



#### Ondu Pinhole Camera

It doesn't get much more retro than a photography technique that dates back to the ninth century, and these beautiful wooden pinhole cameras offer the kind of violettinged, grainy charm that you can't get with an Instagram filter. Choose from ten different models. from US\$70(\$95) / ondupinhole.com



#### Trim Phone

Based on the first phone to use an electronic warbler, this re-imagining of the TRING ringer plugs straight into a standard phone socket. Available in suitable '70s colours, this replica replaces the original dialler with buttons, while retaining the otherworldly oldness that retrorevellers will revere. £40(\$85) / design museumshop.com



#### Pipework Candlestick

Plumbing may involve some pretty revolting materials, but there's beauty in there. Intricate pipework, copper seals, brass valves: the stuff of design dreams. And now you can have that under-basin chic right on your dining room table, as these drippy dazzlers make for a pipingly perfect centrepiece. from £28(\$60) / nickfraser.co.uk

# RETRO LOVER



#### USE IT WITH...

#### **BLUEBIRD TEA CLUB SUBSCRIPTION**

Fill their fancy porcelain with a monthly delivery of three loose leaf tea blends. They can even play 'tea roulette' with them. £60(\$130) (six months) / bluebirdteaco.com



# **DESIGN DEVOTEE**



#### ONE

#### Lexon Liquid Station Desktop Organiser

A uniquely stylish solution to workstation clutter, the droopy dips of this super stationery store make space for everything from paperclips to Post-its. Best of all, it doubles up as a deliciously juicy jelly mould.

Okay, we made that bit up.
£30(\$65) / selfridges.com

#### **TWO**

#### **Nanoleaf Bloom**

A lightbulb for Christmas? It might sound like a high-risk gift strategy, but the Bloom is a surprisingly strong stocking contender. It's so efficient it promises to last over 27 years (past Christmas 2042, in fact). It's also dimmable, even if you don't have a dimmer switch.

US\$40(\$55) / shop.nanoleaf.me

#### **THREE**

#### CMYK Colour Swatch Calendar

With 371 carefully chosen shades, this colour-of-the-day calendar will deliver an inspiring, coordinated strip of hues to your designer friend every week. Each strip is complete with its corresponding CMYK colour value too, should your recipient be planning to go big on the Dulux.

£40(\$63) / typografie.de

#### **FOUR**

#### Toast Rubberband Cup & Saucer

The aptly-named Rubberband is a simple, stylish solution to mug rack blandness. A perfect contrast of white porcelain and colourful silicon, it'll bring some life to the tired teaware gathering dust in their cupboard – particularly if paired with the range's matching teapot.

£30(\$47) / designers-avenue.com

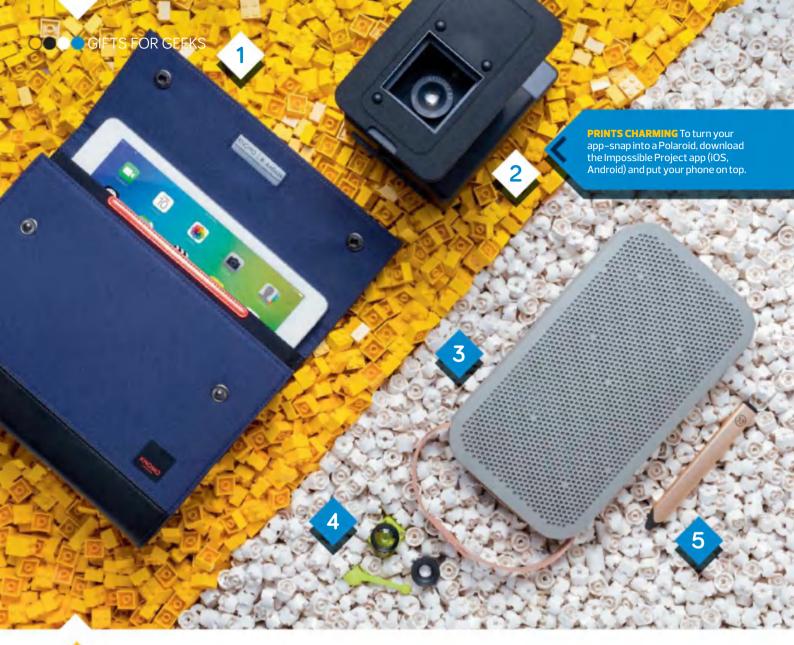
#### FIVE

#### **Beyond Object Align**

Like the classic 'Zig-Zag' illusion, where a magician divides his surprisingly chirpy assistant into three pieces, the Align's 'dislocated' form entices you to twist its stem back into flush-fitting form. It might be overkill for shopping lists, but pen-loving pals will love it.

£40(\$86) / beyond-object.com









USE IT WITH... **PAPER (Efree, IOS)** This sketching app has added diagram tools and annotations to its brushes and pens.

#### ONE Knowad Air

#### Knomad Air Shoreditch

Rooting around in a rucksack while someone reclines a chair into your face is never an aeroplane highlight, so save a friend such travel anguish with this water-resistant iPad Air case. It holds any 10in tablet, plus pens, passport, phone and Knomo's own slim battery pack. \$105 / knomobags.com

#### **TWO**

#### Instant Lab Universal

It's not a true Throwback Thursday until everyone gets their smartphone snaps printed out on Polaroid instant film. This dinky darkroom will do just that, spitting out a real souvenir when you put your phone face-down in its cradle. £160(\$345) / shop. the-impossibleproject.com

#### **THREE**

#### B&O BeoLab A2 Natural

You can get a great Bluetooth speaker for less money but none guite match your Apple fan's taste for build quality and milled aluminium like the A2. Its sound is clean and open, while an impressive 24-hour battery life makes it a fine holiday companion. \$549 / beoplay.

#### **FOUR**

#### Lensbaby Creative Mobile Kit

Photography apps like VSCO Cam are so good they almost make snapping too easy, but there are some places their filters can't go. This pack of two lenses plus a kickstand and mount can help create anything from motion-blurred sports shots to kaleidoscopic landscapes. £75(\$160)/ wexphotographic.com

#### **FIVE**

#### FiftyThree Pencil

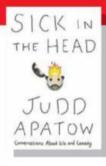
Apple might have given the iPad Pro a posh stylus, but that doesn't mean other iPad owners can't enjoy some digital sketching and smudging. Best paired with an iPad Air, the Pencil is now pressure-sensitive and works with 18 apps, including Adobe's range and FiftyThree's own Paper. £50(\$105)/ fiftythree.com

# RAVENOUS READER



# CHUCK PALABNIUK

BEAUTIFUL







#### ONE

#### The Making Of 2001: A Space Odyssey Piers Bizony

Kubrick's 1968 galaxy-spanning movie remains a cornerstone of sci-fi. and now you can go behind the scenes of the space epic that created space epics. With a compendium of interstellar images from the production, as well as concept paintings and publicity prints, this is perfect for visual visionaries. No HAL included, sadly.

#### **TWO**

#### **Beautiful You** Chuck Palahniuk

Think of Fight Club. Then think of the diametric opposite of it. Does it involve the world's most potent sex toys, so effective that women flock in their millions to buy them from a rogue named C Li Maxwell? So magnificent that they stop leaving their rooms? No? Well, the author of the former just wrote a book about the latter.

#### THREE

#### Sick In The Head Judd Apatow

Comedy's a personal preference – one man's slapstick is in another's stand-up sin bin, which makes finding funny fancies for friends fiendishly fraught. But fear not, for this leafer is packed with stories from everyone in the (US) banter biz. From wild anecdotes to starstruck stories, this is a thoroughly good laugh-a-long that talks to the likes of Silverman, Rogen, Schumer and Jonze.

#### **FOUR**

#### Thing Explainer Randall Munroe

As much as we love, well, stuff, it can be confusing. Nuclear thermodynamics? Cellular biology? Microwaves? Hard to put into words. Thankfully, Thing Explainer does just that, using only the 1000 most common words to describe the devices, science, and inventions that baffle us non-boffins. Put some popcorn in the food-heating radiobox and enjoy.

#### **FIVE**

#### Vinyl: The Art Of Making Records Mike Evans

Following the LP's rebirth as prime collectible material, Viny/harks back to the days when cover art sold albums and every reissued record had fresh visuals. From design and packaging to special grooves and picture discs, this book un-jackets the inputs of labels. designers and artists on symbolic singles and longrenowned LPs.



#### Reel History Alex von Tunzelmann

If you'd rather revel in the action without going Full Nerd, try this quest through movie history to discern fact from fib. Did Cleopatra really bathe in milk? Did Lincoln really patent swipe to unlock?



#### The Water Knife Paolo Bacigalupi

This novel charts a journey on the edge of civilisation's collapse, where deaths rack up in pursuit of Earth's most valuable commodity. No, not a Stuff magazine subscription: it's a search for water.



#### You're All Just Jealous Of My Jetpack

#### Tom Gauld

For those who prefer their funnies with some sharp observations, try this from the *Guardian* cartoonist, who blends the absurd with the intellectual.



#### The Four-Dimensional Human Laurence Scott

Once you've cracked the lingo, delve into what it means to be a human in the digital age. From new knowledge portals to always-on access, this era has changed not just society but us, the people in it.



#### Good Night And Good Riddance David Cavanagh

This book charts the life of Britain's biggest underdog broadcaster, John Peel. Throwing the spotlight on 300 of his shows over a 35-year period, it's a fan-focused foray into his world. ALTERNATIVELY...







### ONE

### Aircraft Aluminium Rolling Pin

This roller rod is machined from aircraft-grade aluminium. Why? Well, not only does it give your cutlery drawer a slice of celebrity chef style, but its heat-conducting skills make for cool culinary creativity, whether you're in a steaming hot kitchen or next to an open window in January. £40(\$86) / thefowndry.com

### TWO -

### Drop Scale

An iPad-compatible wireless weighing whizz, this smart scale adjusts recipes in response to the amount of ingredients you have. Best of all, the capacitive touch button on the silicon scale itself means no need to tap your sticky digits all over your tablet. Delicious. £80(\$170) / getdrop.com

### **THREE**

### Medamade Oil Dispenser

When the mother-in-law swings by for a delicious pasta dinner you need to up your oil game. Grab this conical container, constructed from borosilicate glass and complete with gravitational pouring mechanism, and she'll be bowled over by your olive knowledge.

£30(\$65) / designmuseumshop.

### **FOUR**

### Oxo Good Grips Spiralizer

If you're looking to help someone kick their pasta addiction, stick a spiralizer in their stocking. It slices vegetables into spirals, turning a courgette into noodles that taste just like pasta (they do once they're covered in pesto, anyway). Super-healthy — although it could also be great for curly fries... £15(\$32) / johnlewis.com

### **FIVE**

### Cosmic Dinner Plate (Mars)

If you can't quite afford to get your favourite stargazer a new telescope, bring the planets to their dinner table instead with this range of planetary plates. All 11 are safe for microwaves and dishwashers, and if you buy a few you'll get to spark arguments over who gets to eat their pizza off Pluto. £30(\$64) each / amara.com



### IS IT A BIRD? YES BUT ALSO A CORKSCREW



### **Alessi Parrot**

If you want someone to have a warm fuzzy feeling whenever they think about you, giving them a distinctive corkscrew is surely an effective choice. Every time they take this nice hand-painted parrot from the kitchen drawer they'll be reminded of your good taste and generosity, and then they'll have a glass of wine.

£36(\$77) / store.alessi.com



### Molecular Mixology kit

Adding a nip of Ribena to your can of Tiger once constituted a cocktail, but now society demands that each sip of their Manhattan contains a sphere of flavours that burst lightly upon their tongue. This kit can create such marvels. Two snakebite foams, please, barman.

from £24(\$52) / firebox.com



### American White Oak Toasted Barrel

Thanks to its greater surface area-to-booze ratio, a small barrel will 'age' spirits — give them deeper, softer flavour — much quicker than a big one. So you can put some young spirit in for two weeks, and it'll come out tasting like it's been aged for two years.

£42(\$90) / masterofmalt.com

### **BOOZE HOUND**





### USE IT WITH... DROP KITCHEN

This companion app for the Drop Scale serves up hundreds of free recipes and will handily suggest substitutes for any ingredients you've run out of. **\$free (iOS)** 



### 8-Bit Pixel Clock

"Wow, Dad, is this a Minecraft clock?" Because while big chunky pixels fill one generation with nostalgia for Mega Man and Metroid, they're just as popular with the following generation, which uses them in Minecraft as a digital version of Lego (which is itself still really popular with everyone). So: "Er... yeah, why not? That's why I bought it, because you like Minecraft. Heh heh.'

£15(\$32) / gamerabilia.co.uk



### **Lexon Flip Clock**

At some point in our evolutionary past, scientists say, we were menaced by nocturnal tortoises. As a result, most of us feel an instinctive urge to flip something over when we wake up. The Flip Clock is ideal: you silence the alarm by flipping it, but the display rights itself so you don't think it's 00:01 when it's actually 10:00. £25 (\$54) /

johnlewis.com



### **Monkey Clock**

Vinyl records aren't easily recyclable but they are eminently upcyclable, and design company Upstairs Studio takes unwanted records and turns them into wall clocks. We're huge fans of this monkey-in-ahat design because, while it's stylish and eco-conscious, it's also a monkey in a hat. £28(\$60)/



### Nixie FunKlock Kit

No nerd's lair is complete without retro-futuristic glowing tubes ticking out the hours. This comes as a kit, so there's soldering involved, but for many geeks that will only add to the appeal. The backlight colours are programmable, as is a night mode if you plan on having it in a bedroom. £47(\$100)/ pvelectronics.co.uk

### LOCK STAR

bouf.com



### ALTERNATIVELY... **BAD DOG DESIGNS**

If you don't fancy reacquainting yourself with a soldering iron, this store sells a fine range of pre-built Nixie clocks. bad-dog-designs.co.uk



### ONE

### Sturmanskie Yuri Gagarin

It's said that NASA spent millions creating a pen that would work in space, while the Russians just used pencils. And it's a myth. But don't let that stop you telling the story when explaining the Soviet simplicity of this watch, of the same make and design that Yuri Gagarin wore.

£75(\$160) / sciencemuseumshop.co.uk

### Leff Tube Watch D42

If you're buying for someone with a taste for industrial design, then this solidly beautiful chunk of time is worth the investment. The case and minute/hour markers are made from an extruded aluminium ring, so it looks simple and spare, but still allows for accurate time-reading. £150(\$320) / designwharf.com

### THREE

### Swatch Sistem51

A fiendishly brilliant movement of 51 parts held together by a single screw makes this a proper, self-winding, Swiss-made mechanical watch. But unlike other proper, self-winding Swiss watches, this one's a colourful and fun piece of modern design, and it doesn't cost a fortune. £108(\$230) / swatch.com

### FOUR

### G-Shock G'MIX GBA-400

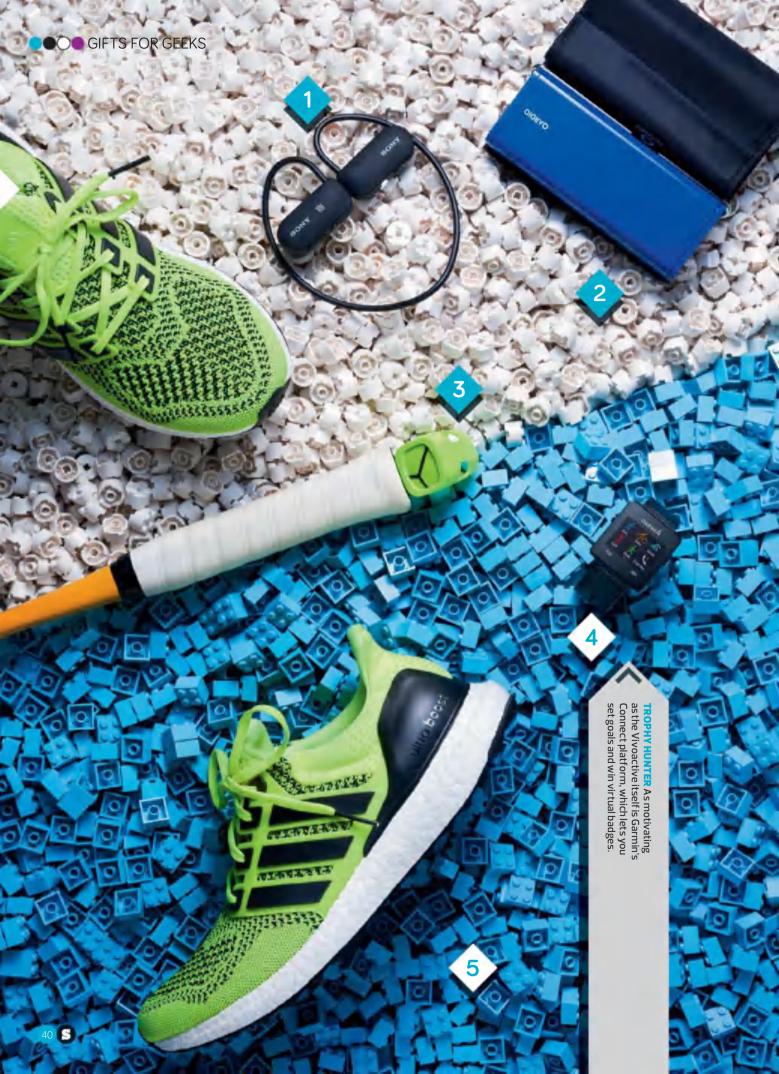
This semi-smartwatch pairs up with your phone to offer volume and track control, audio effects and notifications, and it will even use SoundHound to recognise tunes that are playing outside your cans. It can also use your phone to auto-sync to network time wherever you are. \$269 / casio-intl.com.sg

### **Shore Camber**

Shore's gift boxes combine any of their watches with any three of their nicely made straps. Pick a metal, silicone and leather combo to go with one of their faces and you're effectively giving someone three different watches for a bargain price.

£115(\$245) [£170(\$365) for gift box)]/ shoreprojects.com





# FITNESS FREAK



### ONE

### Sony Smart B-Trainer

If you can't decide between a GPS watch, a fitness band or heart-rate tracking headphones for your beloved runner, this combines all three. They also get pace-matched music, 16GB of onboard tunes and a 10-hour battery life, which means they won't have to take their phone running. \$399 / sony.com.sg

### **TWO**

### Qardioarm

For the scientifically–minded sportsman in your pub clan, this clinically validated smart monitor gives you blood pressure smarts in your sitting room. It tracks systolic and diastolic BP and detects irregular heartbeats, monitoring their changes through the day.

\$215 / getqardio.com

### **THREE**

### Zepp Tennis Kit

Like a miniature Ivan Lendl (pity it can't replicate his withering glare), this accessory coaches players by capturing racquet speed, power and accuracy, before crunching the data into a 3D animation that can be viewed instantly in its iOS and Android phone app.

£130(\$280) / zepp.com

### **FOUR**

### **Garmin Vivoactive**

The Jessica Ennis of GPS watches, this all-rounder mixes tracking for various sports with notifications from your phone. It doesn't have heart-rate monitoring built in, but sleep analysis and compatibility with Garmin's highly motivating Connect platform make it a tempting piece of kit.

£200(\$319) / buy.garmin.com

### **FIVE**

### Adidas Ultra Boost

These trainers' styrofoam-like cushioning is regarded by runners of all levels as one of the most comfortable rides around, while their Primeknit upper expands with your foot on long runs. Few trainers are better for anything from middledistance to marathon training. \$289 / shop.adidas.com.sg

A STRAVA LOVER'S BEST FRIEND





### Polar M450

Don't let your friend's addiction to the Strava app put you off buying them a standalone GPS computer. Neat handlebar units like this will save their phone battery on long rides, and feed their stats obsession thanks to compatibility with power, speed and heart-rate sensors (sold separately). It's good value and also offers a 'Back to Start' feature for directions home and syncing with, you guessed it, Strava.

\$319 / polar.com/sg-en



### Bike wheel coasters

Because if there's one thing better than cycling, it's having a cup of tea and a biscuit and talking about cycling. Remind your favourite cyclist of their (t)rusty steed with this set of four wheely nice coasters. Why not combine them with homemade saddle stools and a pannier rack patio table for the full package? £16(\$34) / design museumshop.com



### Cinelli Winged Tape

Designed by Ana Benarova, this tape will spruce up your mate's handlebars a treat. Combining Cinelli's tape tech and grippy comfort, the Cyclops design is also eye-deal (sorry) for fans of bikes, biology and all things grippy. If nothing else, the red ribbon wrap will set them apart from the rest of the peloton. from £30(\$64) / wingedstore.com

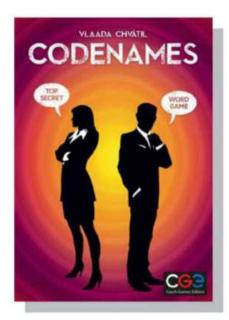


### PDW Shiny Object Inflator

If your cyclist friend regularly finds him or herself huffing and puffing at the roadside with a puncture, sort that out with this CO<sub>2</sub>re-inflation kit. Compatible with both Presta and Schrader valves, it's anicelooking emergency backup for those timesarider gets stuck in a race or a downpour. £12(\$26)/ wiggle.co.uk

# **BIKE GEEK**





### **Codenames**

The smartest game of 2015 is simple but ludicrously tense: 25 random words are laid out on the table, and two team leaders have to help their teams guess their assigned words using short clues. So, "furious, five" would hint that five words on the grid have something to do with anger, or maybe the Fast And The Furious movies. Be careful, though: guessing the board's 'assassin' word instantly ends the game.

£12.50(\$27) / gameslore.com



### **Tales Of The Arabian Nights**

First published in 1985, this classic choose-your-ownadventure game is now available in a beautiful, even more ambitious edition. Will you find a magical sword and become the Sultan of a glittering city? Find your true love in the belly of a giant sea creature? Or just get arrested for mugging a wizard? \$90 / toytag.com



### Skull

First played by the Hell's Angels, this is like poker without all the maths. Players secretly place either skull or rose cards face-down to create something like a field of landmines, and then take bets on how many cards they can flip and reveal only roses. This edition is styled after Mexico's Day of the Dead. US\$25(\$35)/ amazon.com



### **Cosmic Encounter**

This interstellar empire-building game is different every time. Each player picks an alien race, and each type breaks the game in some way. The Virus must be stopped; the Loser wins if he loses, just like Nick Berry; the Gambler can bluff on their encounter card; and the Citadel can build planet fortifications. \$90 / toytag.com

# OARD GAM



USE IT WITH...

**3D-PRINTED BIRD FEEDER** 

Complement your chaffinch cam with this feeder - you can print it yourself using this Thingiverse link: bit.ly/3Dbirdfeeder from €50(\$79) / printednest.com



# TECH KID



### Naturebytes Wildlife Cam Kit

If you've seen Chicken Run and don't quite trust your garden visitors, this kit might just be what you need. Built using a Raspberry Pi and a camera housed inside a funkily angular shell, the Naturebytes kit is a waterproof, heat-sensitive snapper to capture stealthy fauna shots in all weathers. £150(\$320) / naturebytes.org

Osmo

The Osmo platform will keep kids enthralled for hours, and learning as they go. Slot your iPad into the stand and slip the Reflector over its camera and you've got an interactive puzzle peripheral. As they play, the app intelligently recognises their shapes, letters, numbers and drawings. from £70(\$150) / playosmo.com

### THREE

**Anki Overdrive** 

Scalextric for your smartphone, Anki is a modular track of straights and right angles, around which robotic supercars tear in battle or race mode. Compatible with iOS and Android, it lets up to four players control the speed and lane choice, while their cars handle the corners. from £150(\$320) / anki.com

### FOUR

Sphero BB-8

This gyroscopic mini-droid is straight out of your sci-fi dreams. No, not the one with Princess Leia. Like a master of the Force, you can control the BB-8 remotely via an app, or it can be left to explore the living room in all its gliding glory, as you record virtual holographics to Obi-Wan (or Mum). £130(\$210) / store.sphero.com

### Minecraft Gameband

What better way for online offspring to keep crafting wherever they go than to strap their entire brick-built worlds to their wrists? Plug it in, play, and after a day of digital designing, their Minecraft Worlds will be saved on the Band and securely backed up on cloud-servers. Blocky brilliance.

£65(\$140) / gameband.com



# ANDROID ADDICT

### ONE

### WoodPuck Qi Charger

Few things that go by the description of 'puck' are as pleasing and useful as this. Crafted from finest Mao Zhu bamboo (which is good, because it's very sustainable), this little disc will wirelessly charge any Qi-enabled device in a beautiful fusion of nature and tech.

US\$30(\$42) / amazon.com

### **TWO**

### Chromecast / Chromecast Audio

Google's revamped video-streaming dongle still lets you use your phone as a remote for playing web content on your telly, but now it has an improved app, loads of new games and an audio-streaming brother that lets you do the same for playing music on your hi-fi.

\$65/ store.google.com

### THREE

# Forgenuinely Instagram-hooked Androidfans, it's adrag having to take their phone out of their pocket to flick through celebs' snaps of what they had for lunch. Thankfully, this wireless photo-frame-style touchscreenlets you streamInsta-pics onto a living canvas' on your

wall, deskorshelf.

£150(\$320)/

firebox.com

€70(\$110) / homido.com

### **FOUR**

### Homido VR Headset This stereoscopic 3D, 360° head-tracking helmet turns mobiles into movie magicians. Fully adjustable for evesight strength and face shape (should Grandpa want a go), the completely wireless headset can also be used to enter a world of immersive 3D gaming. It's compatible with iOS as well as Android.

fromUS\$300(\$415) / motorola.com

### **FIVE**

### Moto 360 (2nd gen) Smartwatches have come a long way from looking like wrist-based PDAs. and the second-gen 360 might just be the prettiest yet. From the circular display and sharper screen to the stainlesssteel bezel, it's the Android Wear watch that best stands up to Apple's style-conscious wristputer.

USE IT WITH... PLEX (Sfree)
If you have a NAS drive, use the Plex app on
your phone to play its music on your hi-fi.



# BINGEWATCHER











### ONE

### The Wire

The Greatest TV Show Ever Made™ finally gets the box set it deserves. swapping standarddef 4:3 for full HD widescreen like it's 2008 or something But those extra pixels are almost incidental when you're watching this near-flawless study of a city, even if it will take an episode of two to tune into the accents. And since you asked, series two's our favourite.

### **TWO**

A curious and short spin-off from the beginnings of Marvel's Captain America timeline, this eight-episode series was not heavily marketed in the UK, meaning that a lot of people missed its TV airing. But the antics of Agent Peggy Carter, in a stylishly realised post-WWII America, are well worth catching up on especially if Agent Santa is footing the bill.

### **THREE**

### Parks And Recreation

If your children won't stop crying because of all the nasty things Doctor Who said when they accidentally watched your The Thick Of It box set. sit the family down in front of Parks And Recreation series 1. 2 and 3. It takes the heartfelt niceness of The Office (US) and turns it up a notch, but somehow manages to remain charming and genuinely funny.

### **FOUR**

### Mad Men

A psychiatric ward for damaged men allows its inmates to pretend they work at an ad agency in the 1960s. Special nurses work as 'secretaries', towards whom the tragic invalids are alternately lusty and unforgivably offensive... Wait, you didn't know about this? What about the name? And why do you think every episode ends with Don staring into space like he's just been tranquilised?

### **FIVE**

### **House Of Cards**

Unless you've been living under a rock for the last couple of years you can't have failed to notice this blockbuster political remake, which secured Netflix's status not just as a streaming service, but as a maker of Big TV Shows. If you actually have been living under a rock for two years then you're probably a crab, in which case try Crabflix's House Of Crabs.



### Fargo

This isn't a remake of the Coen brothers film but shares its snowy setting, murderous themes and blackly hilarious style. It's also equally good — Martin Freeman's weasely salesman Lester Nygaard is a particular highlight.



### Fear The Walking Dead

This spin-off from The Walking Dead (now in its sixth season) tells the story of what happened before Rick Grimes woke up in an abandoned hospital. Don't worry, there's still plenty of zombies.



### The Thick Of It

We can't help wishing there was a real Malcolm Tucker to stride into politicians' offices, scream abuse at them and fire them on the spot every so often, but we'll make do with Peter Capaldi in this, the defining political comedy of a generation.



### **Boardwalk Empire**

Inspired by the life of Enoch L Johnson, a real criminal kingpin in prohibition-era Atlantic City, this five-season gangster drama is an American classic, a period masterpiece and quite possibly Steve Buscemi's finest hour.



### Orange Is The New Black

Based on the reallife experiences of middle-class jailbird Piper Kerman, OITNB manages to be smart and funny while weaving a fairly complex web of life stories and sneaking in some social commentary. ALTERNATIVELY...





# FILM BUFF









### Leblox

This fun little app lets you create your very own pixellated creations, which can be manipulated and placed into existing photos or used as avatars, before sharing them online for all the world to see. Best of all for secret Santas, you can also get your designs 3D-printed and delivered as personalised gifts, without ever having to leave the confines of your smartphone or tablet. from £14.50(\$31) / leblox.com



Jumbo

**Cutlery Drainer** 

functional fellow

can be used to

drain cutlery or

hold toothbrushes,

thanks to a hollow

trunk that drains

water away. Its

low-poly design

of most - unless

should melt the hearts

This cute yet

# Sneakers: The **Trump Card Game** . Do you know your Air





### Spice Rack

What do Sargol saffron, premium Madagascan vanilla powder, true Ceylon cinnamon powder and fragrant green cardamon powder all have in common? Well, they're four of the most expensive spices on the planet, and this matchbox presents them in adorable miniature bottles. Ideal to spice up any foodie's life. £5(\$11) / inamatchbox.com



### Batman Multitool

No, it won't emit a spray that repels sharks, or blast out oil slicks, but this tool is just as important as the rest of the Dark Knight's arsenal of tricks. Although it looks like a deadly throwing star, it is in fact a harmless bottle opener, to free your nectar of choice from its glass confines.

£6(\$13) / thefowndry.com

### TWO

### Hot Wheels 1:43-scale DeLorean

This is for the DeLorean-obsessed person in your life. The one who's always yammering on about buying their dream car before kitting it out with a flux capacitor and authentic year readout display. But they'll never achieve their dream, because life is a cruel, harsh mistress.

£40(\$86) / iwantoneofthose.com

### **THREE**

### Cocktails Of The Movies

Hollywood and booze have long been intertwined: from Marilyn Monroe's infamous Manhattan to 007's vodka martini, there are iconic drinks littered throughout hundreds of flicks. This illustrated cocktail tome serves up 64 classic recipes from the big screen, promising hours of light-headed fun. £15(\$32) / firebox.com

### **FOUR**

### 1:9 Iron Man Age Of Ultron Vignette

This is not a toy. Nor is it a figurine. It's a delightful hybrid of the two. which comes unassembled, letting the recipient put it together and pose it any which way they fancy. It's true to the films in every single way, minus Robert Downey Junior's sass and exquisitely sculpted facial hair.

£135(\$290) / forbiddenplanet.com

### FIVE

### 3D Death Star Ice Cube Tray

You've just destroyed a planet. The Storm Troopers have been working hard, and your dark-robed boss has given you the night off. What better way to unwind than by enjoying a glass of single malt Bespin whisky, cooled by an ice cube shaped like the very behemoth you're residing in? £10(\$21) / forbiddenplanet.com



# SECRET SANT



### **BACK TO THE FUTURE FLUX CAPACITOR BOX SET**

Your Hill Valley obsessive might still have the trilogy on VHS, but their bookshelf won't be complete without this. £60(\$130) / amazon.co.uk



# SUPPORTED BY





ZALORA

GRAND HYATT



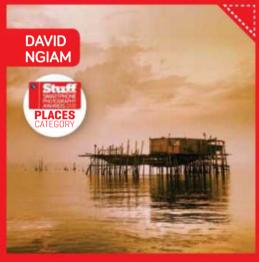














TO READ MORE ABOUT OUR WINNING ENTRIES, VISIT BIT.LY/1SCFLZU





# PICK YOUR SHOTS

DON'T GIVE UP ON SYSTEM CAMERAS

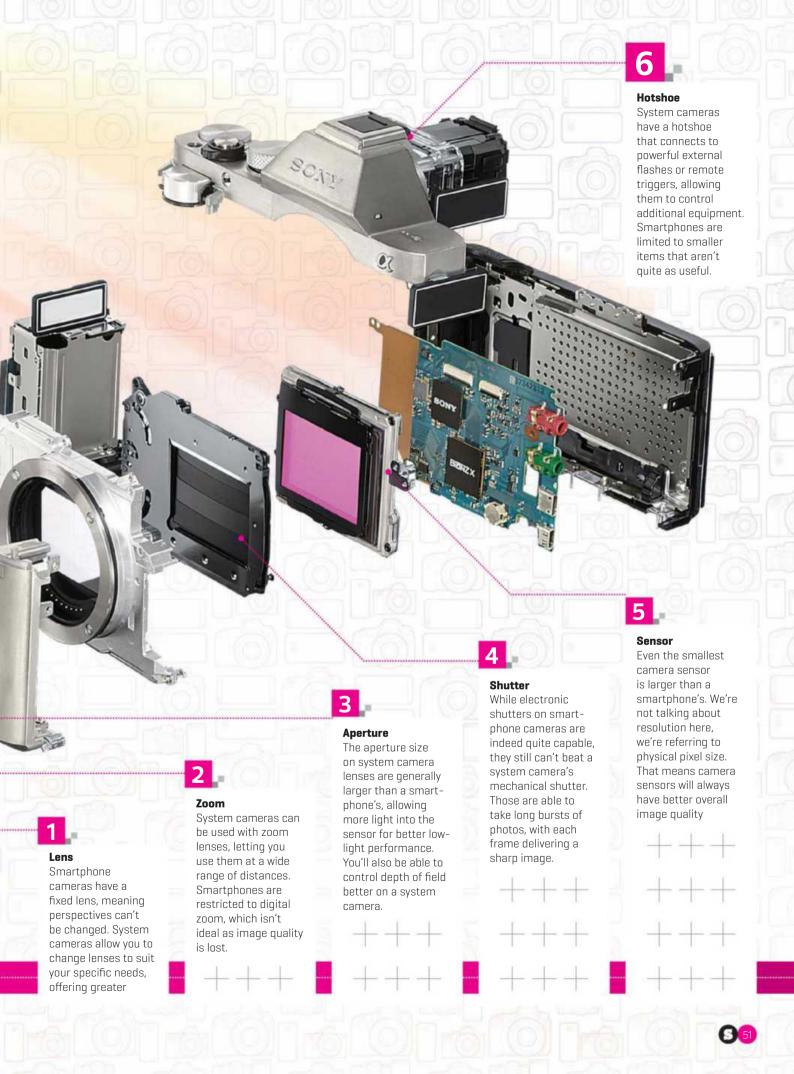
We know it can be tempting to shoot all your photos on that smartphone you've got in your pocket, but you'd be shortchanging yourself if you did. Sure, they can take really good pictures – sometimes great, in fact – but sometimes what you're photographing deserves better.

To prove our point, we spoke to three of Singapore's top professional photographers from different fields, who unsurprisingly shoot gorgeous images on both their smartphone and professional cameras. Two of them were even judges in our Smartphone Photography Awards!

Besides sharing what the difference in quality could be, they let us know how they choose between the two as well.



**GETTING TECHNICAL** 







# WESLEY LOH PORTRAITS

bout 80% of my images are on the smartphone, just because I have it with me most of the time. Most are of my family, friends, and instagram images.

The phone camera only has a wide angle, so it can be very limiting if I want to do a close-up portrait shot. My camera has interchangeable lenses, so it's more useful generally. I would prefer to use the camera most of the time because it's easier to fine tune control, and the images have more leeway for post processing.

For work, I'd only use my phone for behindthe-scenes images. Keeping the setup simple helps to eliminate errors, and a system camera gives me more lens options and total 100% manual override, which vou can't get on most smartphones. I can also use the RAW format, which gives a truckload more flexibility when retouching the image digitally. My system camera also has the ability to trigger strobes, and that is really important in my work.



### **ABOUT**

As a photographer, Wesley's eye for capturing life has led to a nomination for the ICON de Martell Cordon Bleu in 2012. His works have been exhibited at Genesis (Paris) and the University Cultural Centre (Singapore). More recently, he worked with Epigram Books to publish 100 Singaporeans, a photography book showcasing 100 Singaporean faces, in his bid to find the "Singaporean face".

### Web

memphiswest.com

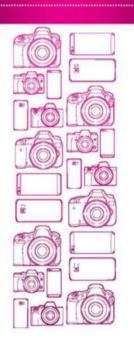
### Instagram

@karwaiwesley















# KELVIN KOH

with me lying amongst them. The perspective made the flowers look of little yellow flowers. They were plentiful but small. That said, with the camera placed on the ground and shot cause your image to be are, and made it looked something similar with your phone, but the got off, and decided to shoot. This was taken dancing among giant yellow flowers. It may be possible to shoot quality would pale in comparison. The fixed that you would not be darker than what you the couple and myself camera phones mean able to zoom in a little drove past a meadow through the flowers, a lot larger than they and make the couple the backlighting may focal length of most look bigger in your shot. Also, the color like the couple was not be as vivid, and We were driving in Santorini when we of the flowers may can actually see.

# KELVIN KOH WEDDINGS

lmost all my personal casual shots are taken on my smartphone. My professional work, however, is still taken with my camera, a Sony A7RII. I think because we have our smartphone with us most of the time, it is most convenient to use. Also, it is easier to upload photos to social media as compared to shooting with a camera. That said, my new Sony camera allows Wi-Fi connection to my phone!

If I need good resolution, or require fast focus, I would use my camera. However, the smartphone is a great complement to my work gear as it allows me to shoot casual behindthe-scene shots. It is also useful for times when I need to upload the images quickly.

I've used my phone camera on my work shoots, but not to capture the actual image that I need. I value the convenience and ease

of use of a smartphone, but a camera allows more options in terms of lens choice, higher resolution, focusing speed, and lowlight shooting ability.

The bigger sensors on cameras just mean that the image quality is a lot better. Straight off, you get really high quality images. The camera also allows better lens variety for different scenarios. The flash is also much better than on a smartphone. A camera also allows shooting in low light and has a better dynamic range. Lastly, focusing is a lot faster, and that's crucial in what I do as a wedding photographer.





### SHOOTING SETUP









### **ABOUT**

Taking a portraiture approach, Kelvin's photography style focuses on photos that are personal, intimate and warm. Hence, the reason behind his choice of wedding photography, capturing the moments as the story unfolds to create a personalised set of honest and rewarding images.

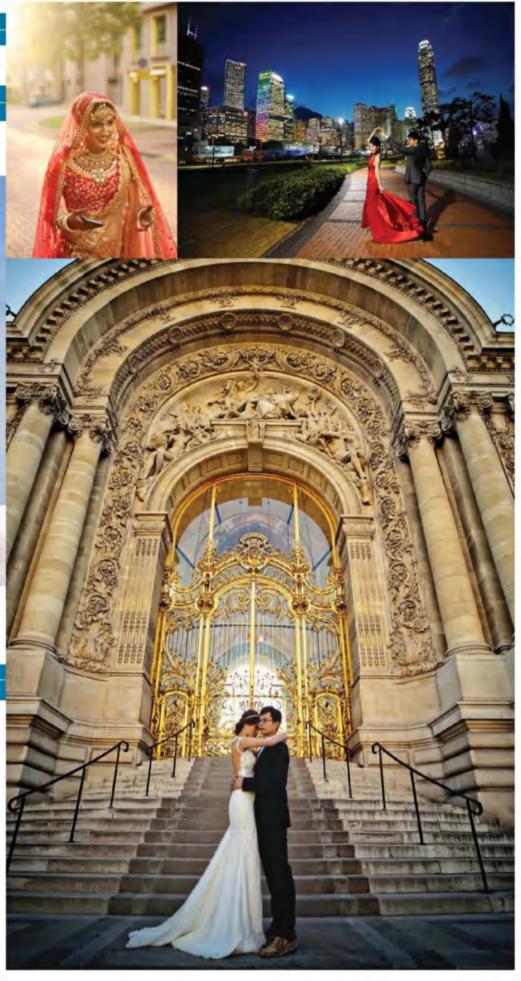
Kelvin's works have been featured in numerous publications, including The Straits Times, The New Paper, Tatler Wedding, Style Weddings and many more.

### Web

lightedpixels.com

### Instagram

lightedpixelsphotography



MARKTEO SPORTS

sually, I shoot about 10% of my photos on the iPhone. It's with me throughout the day, so it comes out mostly for daily snapshots of food, family, or amusing things I want to share with my friends. The rest of the time I'll be on my cameras for actual work.

If I saw an image worth capturing, I'd definitely shoot with my camera. The phone is great for little snapshots here and there, but with the actual camera, the better sensor and lens means I get a much higher quality image in terms of print size options, and even dynamic range when I shoot in camera RAW. With an option to choose different lenses, I also have more choices in terms of framing and composition, which are important to telling a story or conveying information through the photograph.

I've only ever used my phone camera for work once — I was testing the capabilities of the iPhone 6 for the cover of Stuff's November 2014 issue! It worked really well in that controlled environment and the final print size.

Otherwise, I shoot a lot of action sports and lifestyle stuff, which means lots of fast moving subjects and fleeting moments. To capture these, I rely a lot on fast lenses and quick autofocus to freeze action at its peak. With a choice of different lenses I have more options in terms of composing my shots to tell the story with each image.









### SHOOTING SETUP





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Web

markteo.com

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Paper, Tatler Wedding, Style Weddings and many more.

Instagram

markteozc









racing towards me neck-andposition at the UCI Mountain compress the image so that competition. Keeping low to the ground, I could also have is the one of the Athertons racing downhill towards my the two riders can be seen Austria. It was a cold misty Downhill Race in Leogang, my telephoto lens, I could neck to get that sense of morning with mud flying everywhere, and with

One of my favourite shots MARK TEO



# STUFF 200 THE MOST AMAZING THINGS IN THE WORLD TODAY

GADGET-PACKED 4X4 **p61** 

3D SCANNING DESKTOP **P59**  FROM THE **TECHIEST CARS** THE WORLD HAS EVER SEEN, TO THE PLANET'S MOST BLEEDING-EDGE **GADGETS** AND THE HOW-DO-THEY-DO-THAT **APPS** THEY RUN, NOT FORGETTING THE GREATEST GAMES PLACES, **FILMS** AND EVERYTHING IN BETWEEN...





[ Photography Pete Gardner ]

GETTING ARTY WITH WATER



SELF-

DRIVING

**VEHICLES** 



### DOT BRAILLE SMARTWATCH

The Dot is It seems we're a potential life-changer: finally ready to go driverless: a smart watch prototypes of that displays physical Braille the Google Self-Driving Car and dots, so the Freightliner the visually Inspiration impaired can autonomous read notifications truck are already and texts. Yes, out on American in the future. roads. Taking blind people human error out will be able to waste just as of driving may be kind of unsexy, much time on but it'll save Facebook as a LOT of lives. everyone else. google.com/ fingerson. selfdrivingcar strikingly.com



### REVERSE GRAFFITI

This technique (aka 'clean tagging' and 'grime writing') has seen artists like Paul 'Moose' Curtis create huge murals by doing nothing more than blasting dirt from public landmarks with a jet wash. Naturally, tech companies like Microsoft and Nissan have started using it for guerrilla marketing.



### **OPEN BIONICS**

There are over 10 million amputees worldwide, but good prosthetic limbs cost tens of thousands of dollars. Using 3D printing, Open Bionics is creating light, strong, personally tailored robotic hands at a tiny fraction of the price. If there's a better use of robotics, we've yet to see it.

openbionics.com



### EX MACHINA

Alex Garland's dystopian tale of a humanoid Al's attempts to pass a Turing test ticks off countless items on the sci-fi checklist but never becomes predictable or drifts into lazy cliché. In fact, Ava (Alicia Vikander) is so convincing as the robot. you'll probably start questioning her humanity vourself. exmachinamovie.com



### GOOGLE PROJECT SUNROOF

·····

Using an astonishing combination of data (including 3D modelling of your roof and historical cloud patterns), this project can tell you exactly how much you'll save by installing solar panels on your roof. It's US-only for now, but has worldwide ambitions. google.com/ get/sunroof

### USB-C

It's super-fast and supports charging. But the big USP?

### **GOOGLE PHOTOS**

This app sorts your pictures into different categories in the cloud. Don't ask how. It's magic.

### BE MY EYES

An ingenious iOS app that pairs visually impaired users with volunteers over a live video chat

### TOMTOM RANDIT

This action camera automatically generates a rough highlights edit ready to show off to the world.

### SWINCAR (swincar.fr)

Four wheels fixed on articulating 'arms' can handle practically any terrain and keep you upright.

### **DOLBY ATMOS**

A full speaker array means sound emerges from all over the cinema Also available for your living room

### STUFF THAT'S CLEVER



### LAPIERRE E:I SHOCK AUTO

Twenty years of tweakery have enabled fullsuspension mountain bikes to climb and descend with equal poise and minimal effort. The E:I Shock Auto system adds accelerators and actuators that open or close the suspension based on the terrain. £2900(\$3220) / lapierre-bikes. co.uk



### SPOTIFY DISCOVER WEEKLY

Spotify's
Discover Weekly
playlist is like
having a mate
make you a
mixtape every
Monday morning,
but with your
friend not only
knowing pretty
much every song
ever recorded,
but having them
in his record
collection ready

to share. He's

taste, too.

got pretty good

play.spotify.com



### VOLVO LIFEPAINT

This is surely something of a must-have for cyclists a transparent spray that turns almost any material into a bright reflective surface when car lights bounce off it. If you can resist spraying rude words on your neighbours' cars, the practical applications could be life-saving. volvolifepaint. com



### **SHAZAM**

One of the few apps to have over 200 million downloads, Shazam is a genuine must-download. Being able to find out the name of a song and the artist from just a couple of seconds of music — and then add it directly to a Spotify playlist — will make sure you never miss out on a catchy tune.

\$free / shazam.com







### SOUND OF POWER ST VLADIMIR

Fortunately for the future of the planet there's only one Vladimir Putin (although don't bet against him building a clone army), but Sound Of Power has made 100 of its Vlad-shaped speakers to make up for it. Who knows how good it sounds, but it's certainly a talking point at dinner. sound-of-power. com



### JAGUAR F-TYPE COUPE

Jaguar's F-Type Coupe isn't electric, it doesn't drive itself and it can't fly (although it's so fast it sometimes feels like it could), but of all the cars we've driven in the past year, there's something about the F-Type that's impossible to shake off. If only it was the price tag.

from \$430,000 / jaguar.com.sg



PURRS LIKE A 161MPH KITTEN

### IMOGEN HEAP'S MI.MU GLOVES

They look like a gimmick until you see them in action, when you realise the gloves are an intrinsic part of Heap's live performance. Gestural controls give her intuitive command over playback and effects. Freeing the artist from hardware, Mi.Mu breaks down barriers between musician and machine.



### B&O MOMENT

It sounds more like a new low-fat chocolate bar than a high-end hi-fi, but try to bite off a section of B&O's chunky Moment and you'll be shelling out the cost of another one (a not insignificant \$4000) for dental fees. Still, at least you'll have a nice streamer. \$4000 / bang-olufsen. com



# THE RETURN OF THE TECHNICS TURNTABLE Technics' first turntable since its 1210 is a DJ second coming

### TC TONEPRINT

The TonePrint phone app sends new effects into a stompbox as a coded audio signal via a nearby guitar pickup. Absurdly, it works

### AKG 451

We loved these on-ear cans a over \$249; now they're \$149

### GARAGEBAND

A '90s producer would be left in tears of terror by the power of this free digital workstation.

### ISIS KARAOKE

Beat extremism with laughter, using this Twitter account

### PRO-JECT ESSENTIAL II

24-bit digital optical output.

### STUFF THAT SOUNDS GOOD



### **NAIM MU-SO**

The Naim Mu-so is quite clearly very cool, even if you've no idea what it actually does. But as you've asked, it's an all-in-one music system that combines all of Naim's many decades of hi-fi experience with the latest in streaming. It'll play anything, from Spotify to hi-res studio masters

\$1874 / naimaudio.com



### DICE

"No booking fees" sounds good, doesn't it? Almost as good as "free cookies" or "drinks on us". Dice can't help you with the free food and booze, but the ticketless gig tickets it sells on its app have nothing added on top; plus, because they're trapped inside your phone, they're pretty much impossible to tout. \$free / iOS, **Android** 



### TEACHING SIRI YOUR NAME

Siri already knows your name but there's more fun to be had teaching it a different one. Perhaps you've always wanted to be known as The Archbishop of Banterbury but vour parents wouldn't let you change it as a child. Just tell Siri what you'd rather be called and stage one of your transformation is complete.



### HOW MUSIC GOT FREE BY STEPHEN WITT

You wouldn't think codec chat would make for a thrilling read, but Witt's book about how we went from CDs to MPfreebies, largely thanks to one bloke, is illuminating and nostalgic in equal measure, particularly if your know your AAC from your OGG Vorbis. US\$15(\$21) / amazon.com



### **SONOS**

It's 2015 and wires should be extinct. Sonos's elegant wireless speakers spread across the house, letting you throw the teenage house party of your dreams with only your phone to DJ from. They look good, they sound good and they network so easily that you can add to your collection when funds allow. from \$399 / sonos.com



### YAMAHA R-N602

Old-fashioned '70s-style hi-fi meets new-fashioned music streaming in this amp, which combines big, satisfying switches and aluminium so coarsely brushed you could file your nails on it, with MusicCast tech allowing you to play through any source that's connected. £500(\$1070) / yamaha.com





### TECHNOLOGY WILL SAVE US

The tech you can make is not as advanced as the tech you can buy. Such is life. But the tech you make gives you a better understanding of the tech you buy: how to use it, how to fix it, how to avoid buying what we in the techosphere like to call an 'Amazon Fire Phone' techwillsaveus. com



### **ZURI 01**

The best thing most people ever make out of a sheet of A4 is a feeble paper aeroplane, but Hamburg's Zoobotics have raised the bar so high you'd need a telescope to see it. Its Zuri 01 kit comes with everything you need to build a 'bot, which includes nothing more than paper and cardboard for the body. zoobotics.de



### FORMLABS FORM 1+

The 3D printing dream is a miniature production line in the cupboard under the stairs. The 3D printing reality is usually slow and disappointing. Not so with Formlabs' Form 1+, speedily and consistently churning out stuff that's so detailed it looks even better than the machine itself. €2800(\$4420) / formlabs.com



### MECCANO HOME FURNITURE

If you're going to put most of your furniture together anyway, why not relive the joys of building Meccano models? The range has everything from a TV cabinet to an outdoor bench or even a lamp. Your whole house could look like it's home to a family of miniature toy people. meccanohome. com



### **GIPHY CAM**

As the human race descends into a subspecies that communicates exclusively in emojis and GIFs, Giphy Cam is your new mouthpiece. It makes creating a GIF as easy as shooting a quick video, and you can garnish it with all kinds of meme-worthy graphics and effects for added lolz. \$free / iOS



### THIS HOMEMADE CONTROL PANEL

·····

This is how any self-respecting geek should be controlling their computer from now on. With over 100 programmable buttons and switches (plus sound effects) it's the stuff geek dreams are made of (mainly LEDs, Arduinos and USB controllers). bit.ly/computer\_ control\_panel

### PROJECT ARA

Building your own phone is a bad idea, unless it's Google's amazing clicky-magnet futuro-device.

### ARNOLDC

This programming language replaces common commands with Schwarzenegger one-liners

### BLURB

The best service we've used for turning digital photos into a hardback book of memories

### I FGO FFRRARI F40

This costs considerably less than a full-size one, and is significantly easier to place on an office shelf.

100 PAPER PLANES TO FOLD & FLY (amazon.co.uk)
The most satisfying way to fly without shelling out for a ticket

### PORTABLE R2-D2 PS4

We'd punch an ewok in the face to own one of these consoles. Seriously, bring us an ewok.

### STUFF TO MAKE



### RASPBERRY PI 2

Yes, you can build a NAS, a media player, a stratospherepenetrating robot balloon or ocean-navigating vessel with a \$61 Raspberry Pi 2. Or you can simply enjoy the fact that you've got a Windows 10-running mini-PC for less than the cost of that last round of drinks. \$61/

raspberrypi.org



~~~~~~ Where we're going, we don't want wires. Ikea has the right idea. building wireless charging points into some of its new furniture: bedside tables and lamps that can re-juice your phone with a simple touch. And they actually look quite nice, which is a bonus. from £50(\$105) /ikea.com



### NUTRIBULLET

The very latest must-have for faddy foodies, Nutribullet pulverises fruit and veg into a smoothie - even the stems, seeds and gnarly bits you usually chuck out. Yes, it's a blender. But it uses 'bullet cyclonic action', making it superquick, and it's a doddle to clean. £85(\$1810) / buy nutribullet. co.uk

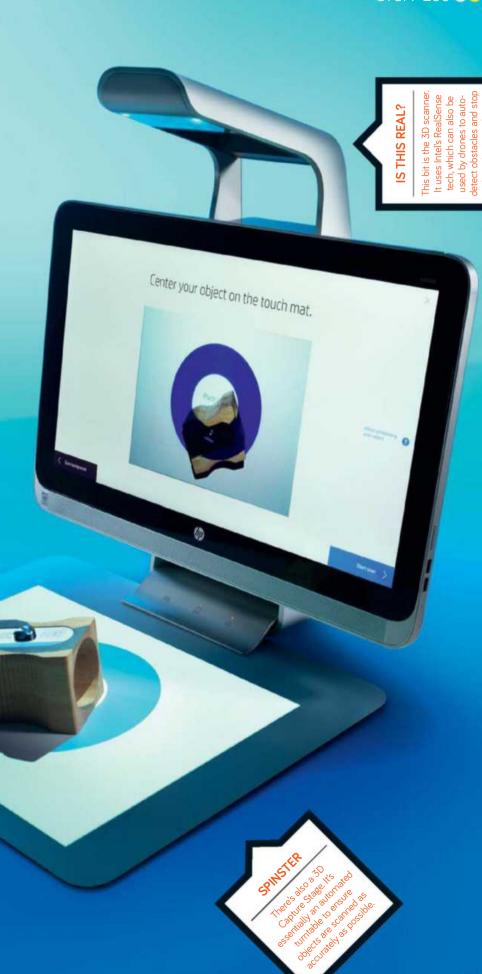


### 3DOODLER 2

Definitely not for meetings, otherwise they're going to see your boredom turn into a 3D sculpture. Regardless of how pretty that bicycle or pizza you've made is, they're not going to be happy. But for arty types, this is like having a 3D printer in your palm. \$149 / the3doodler.com

FANCY FLATPACK PHONE FUELLING

Apple may have a desktop with a 5K screen, but HP's bonkers all-in-one feels more like a Thing From The Future. Why? Not because it's more powerful or has a better display or anything like that, but because it acts as a bridge between the physical and the digital worlds. Put something in front of it and the Sprout will scan it into itself as a 3D model. Reshape, resize and rethink, then send it to your 3D printer, and it'll squirt it back out into hardspace. The unashamedly experimental Sprout represents exactly the kind of risk-taking, imaginative gadgeteering we love. £1900(\$4075) / hp.com/sg





ONE-THUMB SNOWY FUN



### DOUBLE NEGATIVE

From the black hole in Interstellar to Ex Machina's creenily realistic Al android Ava, if there's a scene in a film that's made you go 'wow' recently, it's probably down to Dneg. Interstellar's black hole was so convincing there was an article published about it in the American Journal Of Physics. dneg.com



### ALTO'S ADVENTURE

We've played loads of onethumb leapy games, but none have as much style as Alto's Dynamic weather and lighting make it a visual feast. and the fluid movement turns the simple idea of bombing down mountains doing backflips into some genuinely satisfying gameplay. \$1.28 / altos adventure.com



### OLYMPUS OM-D E-M10 MARK II

Cameras are Goldilocks gadgets: to get a lot of good pictures you want something with a big sensor but a small body. a solid build but a throw-in-a-bag price, a host of controls but also speed and simplicity. The new E-M10 is, in all these ways, just right. \$1148 / olympus. imaging.com.sg



### APPLE MACBOOK

To be honest, the MacBook isn't the best laptop Apple makes — that would be the 13in Pro. It's actually possible to buy two very good Windows 10 devices for its £1050 asking price. But this ultrathin 12in machine, with its luscious screen and haptic touchpad, is also the laptop we want the most.

\$1788 / apple.com/sg

OOPS I DROPPED



### **EARTH VIEW**

As brilliant as Google Earth is, a lot of the planet is really quite boring to look at. Reading, for example. Or most of Belgium. Earth View cuts all those bits out and just shows you a collection of the most peeper-pleasing chunks of landscape out there. And all without leaving vour desk. earthview. withgoogle.com



### GOOGLE CHROME-BOOK PIXEL

The new Chromebook Pixel only runs a single web browser, Just because this laptop has a screen with 4.3m pixels, a 12hr battery life, USB-C charging and a svelte aluminium body doesn't mean you have to go and buy it. But it might be an idea. £800(\$1715)/ google.co.uk/ chrome

### STUFF THAT LOOKS NICE



### **VOLVO XC90**

A big SUV may look like an odd choice for the likes of Stuff, but the XC90 is a seriously techie motor. We particularly like the T8 version, which has an extremely clever, fast and efficient hybrid engine, and all models come with a supersmart, tablet-like infotainment from \$330,000 / volvocars.com/



### DEVIALET PHANTOM

If you think B&W's T7 is expensive for a Bluetooth speaker, it might be best to look away now. The Phantom might cost more than a small car but it is also almost as powerful as one. with 3000 Watts inside the Silver version. Oh, and it looks like some sort of futuristic escape pod. \$3490 / devialet.com



### YAMAHA XJR1300

In theory, the XJR1300 is nothing special. It's not the fastest. it's not the lightest and it doesn't have anyparticular tech on board to make it pull a wheelie every time you wiggle your ears. But really, just look at it. Wouldn't vou love to have that little beauty sitting on your drive? £8600(\$18,450) / yamaha-motor.eu





### **MOTO 360**

The original Moto 360 was Android Wear's high watermark for some time, but with its improved processor and a dollop of extra RAM, we like the new version even more - plus it'll now work with iOS, so you can mix and match your phone to your wearable. And you can't do that with an Apple Watch. US\$400(\$555) / motorola.com



### **LG 55EG960T**

4K's brilliant! OLED's brilliant! What a surprise, then, that 4K OLED is megabrilliant! This is the first telly to bring the two technologies together, and the result is a pin-sharp picture that combines the deepest blacks with the whitest whites in a fashion that only outer space can match. \$6999 / lg.com/sg

IS IT ART OR JUST A LAMP?





### ONY ALPHA A7 II



### **APPLE IPAD** AIR 2

That Apple chose not to refresh the iPad Air 2 this year speaks volumes about just how good its flagship tablet is. Pitched at the perfect midpoint between the new Pro and Mini 4, the Air 2 is an ideal device for multitaskers – as good for Netflix as it is for Office docs on the go. from \$688 / apple.com/sg



### **SANTA CRUZ** STAR WARS **COLLECTION**

With packaging made to look like vintage toy boxes and designs depicting the brush with the Sarlacc Pit in Return Of The Jedi, you'll need some pretty serious mind tricks to convince somebody these are not the decks they're looking for. from US\$60(\$84) /santacruz skateboards.com



### **MOTOROLA MOTO X STYLE**

Every phone you can buy is made from pretty much the same components, collected together in a shell and given a bit of software. With most running similar software, the biggest difference is the shell, and the X Style's design is fully customisable using Moto Maker. US\$300(\$415) / motorola.com



### THE CLOUD

There are two ways to enjoy a thunderstorm in your lounge. You could take off the roof and wait for some inclement weather, or buy this Arduinocontrolled, motionactivated ministorm, which rumbles, flashes and plays music in your front room, all without invalidating your insurance. from US\$580 (\$805)/ richardclarkson.



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#### STAR WARS **BATTLE-FRONT**

A distinctly promising new Star Wars movie looks ready to finally banish the painful memory of Jar Jar Binks, and with the imminent arrival of Battlefront, there's never been a better time to put 'Jedi' on your census form. But, one guestion: Will it let you play as Admiral Ackbar? starwars.ea.com



#### FIFA 16

Without a copy of FIFA and a PS4, lunchtimes at Stuff HQ would be tedious. lifeless affairs. Instead we experience the highs and lows only football can bring, thanks to a highly organised league (complete with a seeding system based on FIFA world rankings). Step aside, Blatter we've got this covered. easports.com



#### **ROCKET LEAGUE**

As competitive as the Super Mario Kart World Championships and more addictive than popcornflavoured bubblewrap, this football-in-cars funfest has been the surprise hit of 2015, eating up way too much of Stuff's time. So forgive us the odd typo this month, eh? rocketleague. psyonix.com



HUGE. Some of its side

quests are longer than

most full games and

you could spend hours

just playing the amazing Gwent card

game within it.



#### **HER STORY**

Fans of monochrome Danish crime dramas will love Her Story. an interactive game featuring murder, sex and a search engine. To complete it you must uncover archived interview clips of suspect Hannah Smith. The order you watch them in will affect your entire view on this sordid tale. herstorygame. com



#### **FOOTBALL MANAGER CLASSIC**

If you'd told us 10 years ago that one day we'd be able to carry around rectangles that let us play Football Manager anywhere, we'd have attempted to destroy it in the interests of saving humanity. Honestly, it's a wonder anybody gets any work done at all. footballmanager. com

### STUFF TO PLAY



#### **WARHAMMER OUEST**

Gone are the Saturdays when you could go to Games Workshop and spend an hour choosing a new 12-sided die. Your Ork & Eldar Paint Set is in the loft somewhere. But it's not all bad - you can still beat up a Snotling or stab a Skaven in the dungeons of this fiendishly addictive point-'n'-wizard. rodeogames. co.uk



#### **DOOM**

The godfather of all first-person shooters will make you a next-gen offer you can't refuse when it returns next year. The kids might be more interested in yet another Gunbloke 2000 game, but gamers of a certain age know that Doom deserves some space on your fragging schedule. doom.com

> THINGS COULD





#### **FALLOUT 4**

In Fallout 4 you emerge from a nuclear bunker after 200 years to find a postapocalyptic wasteland where Boston used to be - and something not entirely dissimilar is likely to happen to you once you get engrossed in Bethesda's latest action RPG. No problem, just don't forget to eat every now and then. fallout4.com



#### 1999 PALM V

This hefty personal Stuff's first issue and shows, in a way, we haven't come that far...

### CASIO WOV-1

Your Apple Watch can 0.014MP greyscale

#### 2001 SKY+

The ability to pause whatever you're watching then skip the ads remains a great

#### 2001 APPLE iPOD

It wasn't the first, or the only, but the iPod is the one we're here because it was better.

Workers have removed stones from 21.5 million square metres of South African desert, by hand, for the Bloodhound's record-breaking run.

**FAST & FURIOUS** 



### **BLOODHOUND** SSC

With 25,000 more horsepower than the QE2 but the carbon footprint of just 4.1 lactating cows, you might expect the Bloodhound to look more like a barn on wheels, with an exhaust that looks like a set of udders; but if all goes to plan this British-made rocket car will be the first to break 1610kph. It'll take 55 seconds to hit that speed, just enough time for driver Andy Green to think about what he's got himself into. Don't expect to fit much in the boot - that's where the 3000°C engine goes. bloodhoundssc.com





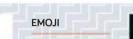
### **ONEPLUS 2**

It's hard to discuss the OnePlus 2 without going straight to its crazy price. For \$598 you get specs that knock an iPhone 6S into a cocked hat, then find a fetching outfit to go with that hat and wear it while joining Samsung's similarly-specced Galaxy S6 at the Super Specs Party. If you can find one, buy it. from \$598 / oneplus.net



#### **BEN** AINSLIE'S 'BATMAN' **BOAT**

Land Rover BAR is the Team Sky of sailing. The crew's grand plan to become the first Brit winners of the America's Cup in 2017 rests on its secret 'T2' superboat, heavily based on this prototype. It can reach 97kph thanks to its enormous. 23m-high articulating wing sail.



**STUFF** 

THAT'S FREE

Ghost. Banana. Fire. Penguin. Saxophone. In 2015, you need never write these words again. What next? Xenomorph. Haggis. Despair.

#### **STRAVA**

There are two types of cyclist and runner: those who use Strava, and those who don't think this whole app thing is ever going to take off.

#### WINDOWS 10

Yes, it's 2015's Most Prosaic Download, but Microsoft's return to the Start Menuis possibly the most graceful U-turn in tech.

#### **CITYMAPPER**

Uber's cheap, but it's not as cheap as a night bus. The money you save can buy a couple of fish 'n' cheese pies, and bingo: a whole bus to yourself.

## STUFF THAT'S FAST

Why should you wait to see that crisp shaped like the Wu-Tang Clan that Vine of Danny Dyer calling somebody a "toerag" buffers?

#### SOLID STATE DRIVES







#### CROWD-FUNDING

Kickstarter et al have gone and made everyone a potential tech billionaire. You no longer need an in with a Silicon Valley investor to get your amazing ideas off the ground - all you need is an Indiegogo page. Without crowdfunding, there'd be no Pebble watches, Ubuntu Edge phones or Ouya consoles.



#### **TINDER**

Love may be a losing game, but luckily dating is now a really fun one. No more nervous introductions in bars or getting every girl in town to try on a shoe you found: Tinder makes searching for The One as easy and addictive as simply swiping to the left or right. Ahhh, the romance. \$free / iOS, Android



#### **SERIAL**

Part murder mystery, part all-encompassing phenomenon: no other podcast is responsible for so many amateur detectives. The question of whether Adnan Syed killed his girlfriend 15 years ago had 75 million people hooked as This American Life journalist Sarah Koenig told the story. It's back this autumn. serialpodcast.org



#### **INSTAGRAM**

There's more to this photo-packed app than pictures of cheese on toast hangover cures and Kim K's rear end. Broaden your horizons with the likes of the @nasagoddard account, for example, and you've got incredible pictures of the wonders of the universe right at your fingertips.

\$free / iOS, Android



#### **AIRBNB**

Time to dump the snorers in 12-bed hostels, buffet hotel breakfasts and beige B&Bs: Airbnb has made travelling far more interesting. With local hosts offering up their flats, treehouses and igloos, you can find cheap, authentic and bragworthy places to stay all over the world. Plus you don't need to bring your own teabags. airbnb.com



#### **AWESOME**

There are always some tasks you can't be bothered to do, and this text service makes that first-world problem vanish. Whether you're having to book train tickets home for that unavoidable family dinner, or find a last-minute present for your significant other – text Awesome and they'll help. textawesome. co.uk

noto ESA/Hubble & NASA/Judy Schmidt ]





#### 2004 FACEBOOK

Great for checking up your aunt's a racist.



#### 2004 MOTOROLA RAZR V3

A *Tron*-inspired keypad and a skinny chassis turned gadgets into

#### 2005 YOUTUBE

In the year that Old TV gave us Come Dine With Me and The Apprentice.

### **GOOGLE EARTH**

AUTO-REMOVES SOCIAL **TEDIA** 



#### **TWEETBOT**

There are few things more unbearable than Twitter during a TV show you don't watch. Great British Bake Off? More like Bog Off. Tweetbot's iOS app lets you mute hashtags. users and even apps, so you can block someone's auto-tweeted running stats and pretend Piers . Morgan never really existed. \$12.98 / iOS



#### **MOMAX IPOWER XTRA**

You don't always function in the morning until you've poured something brightly coloured and bordering on radioactive down your neck, and neither does your phone. This portable charger has enough juice inside for nearly five iPhone charges – it even comes in a can. £35(\$75)/ momax.net



#### **KINDLE PAPERWHITE**

Until now, printed books have been higher-resolution than e-readers, but Paperwhite crosses that threshold and joins proper books in 300dpi territory. It's still not as good as real books for hitting a wasp. but it's better for hiding the fact that you're reading steamy werewolf fiction. \$164/

amazon.com



#### SAGE SMART TOASTER (

## PAYING FOR THINGS BY TAPPING YOUR PHONE

### STUFF THAT MAKES LIFE EASIER



#### **GOOGLE MAPS**

How anyone got anywhere before it is a mystery. Turn-by-turn navigation has changed the pedestrian game and, thanks to Street View, we can spy on where we're going before we get there. The only problem is that live traffic undates have destroyed our number one excuse for being late for work.



#### **PHILIPS HUE LIGHTBULB**

The first really nice smart lighting system is still the best by far... and with new entry-level white lights and wall switches, Apple HomeKit support and even TV shows, movies and games that interact with your lights, it's hard to see Hue being beaten any time soon. from \$89 / amazon.com



#### **GOOGLE ONHUB**

Wi-Fi routers are boring, but Google's OnHub is the least boring of the lot. It lets you prioritise particular devices to get bigger chunks of the bandwidth pie so your Netflix binge doesn't stutter to a stop — and it doesn't expect you to think in binary code. Bet you still fix it by turning it off and on again. US\$200(\$280) / amazon.com



#### **NEST THERMOSTAT**

The traditional thermostat is an unfathomable piece of tech. Stop fruitlessly jabbing at it and get Nest, which lets you control the temperature of your house through an app on your phone. Over time, the smart system will learn your heating ways, saving you energy and precious pennies £180(\$385)/

nest.com



#### **SMARTER** WI-FI COFFEE **MACHINE**

Most mornings you can get your gentleman butler to brew you up a Monsooned Malabar, but you gave Aloysius the week off. Luckily, this machine is just as good at making coffee to your exact taste, equally adept at knowing when you're awake, and almost as attractive. £180(\$385)/ firebox.com



#### FLYABILITY GIMBALL

Proof that drones aren't just for scaring away pigeons and buzzing the tower (or next door's chimney, as it's better known), the winner of this year's Drones For Good competition was a 'copter that flies inside a protective cage, designed to help find survivors in hazardous environments



#### **SPACE X**

To be completely honest, we've put SpaceX on this list because, if (or should that be when?) we decide to launch Stuff's Mars Edition, it's Elon Musk's private space company that'll be flying us there. After including them in the Earth edition, we're hoping they might knock a billion or two off the ticket. Whaddaya say, Elon? Deal?



Blade Runner, Alien and Prometheus, and the man in front of The Departed and True Grit, the story of an astronaut and engineer who is accidentally left behind on Mars and determines to survive using geekery. It's based on a novel by a former World Of Warcraft programmer, but don't let that



SALAD FROM SPACE

#### SPACE LETTUCE

Lettuce doesn't have much street cred these days... except the red romaine lettuce that was the first thing to be germinated. grown and then eaten on the International Space Station, that is. Cultivated without proper soil or sunlight, it showed the potential to grow food in harsh, arid areas back on Earth.



#### LILY

We are not pro camera operators. We do the awesome action and we expect someone else to do the filming, and so we applaud the emerging age of the follow-me drone. There are several – AirDog was the pioneer – but we like Lily's ability to take off from water. And her sweet little face. US\$700(\$975) / lily.camera



#### NO MAN'S SKY

2016's most exciting game isn't a bro-tastic first-person shooter or yet another sequel; it's an ambitious universe simulator from a tiny studio in sleepy Guildford. Mine for minerals to upgrade your kit, rob cargo ships, or take on pirates in a world bigger than any game ever made. £50(\$105)/ no-mans-sky.com



#### BREAKTHROUGH LISTEN

This \$100m project, starting in January, will be our biggest ever search for intelligent life in space.

#### THE PHILAE LANDER

A bouncy landing then a sevenmonth snooze? That's just how we'd explore outer space too.

#### **AOUILA**

This solar-powered drone will circle for 90 days, beaming down data to cat-video-free areas.

#### TERRAFUGIA TF-X

Yes, that's a flying car. Here's to a future where we'll take off vertically at the press of a buttor

#### THE CLOUD

Remember dreaming of the day when you'd be able to remotely access your data and contacts?

#### 25 VERDE

This five-storey Turin treehouse has 150 trees that make it look like something from *Jumanji*.



### STUFF IN THE SKY



#### **RIMOWA F13**

Back in 1933, Junkers made the world's first commercial airliner, the F13. Over 80 years later we have 40 million flights a day and Ryanair, so Rimowa's plans to build a fleet of replica F13s to take to the skies for test flights in 2016 is most welcome. Bet they won't charge you a fiver for a sweaty cheese toastie on board either.



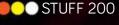
#### TENTSILE TRILOGY

A cross between a hammock and a treehouse, the Trilogy is a tent that can be suspended between trees, with enough space inside to sleep six people. It might be a pain when you need to answer a call of nature, but it keeps you off the ground and out of the reach of angry badgers. £815(\$1750) / tentsile.com



### **DJI PHANTOM 3**

By the time we compile Stuff's 300th issue we'll all have flying cars. Until then, we'll have to make do with DJI's Phantom 3 for our aerial kicks. No, it may not be able to carry your shopping, but the Standard model (pictured) is simple to fly and affordable, while the Professional version can shoot pixel-packed 4K video — and your flying Ford won't be able to do that. Okay, it probably will. But it doesn't exist yet. This is the connoisseur's drone, excelling at dronetography, easy to control and stuffed with techy flying aids. If only it had seats it had seats. \$1599 / dji.com.sg



### SECRET CINEMA

After Secret Cinema's Back To The Future event suffered a hiccup in the flux capacitor last year, things looked a bit bleak for immers-o-movie fans, but this summer's Star Wars shows tore the Death Star a new thermal exhaust port. Wannabe Jedis could stroll around Mos Eisley trading seeds with the local merchants, or trying not to get thrown in jail by patrolling Stormtroopers. At \$160 per person it makes a ticket and even the biggest bucket of popcorn at your local Odeon look a bargain, but it's a small price to pay to realise so many childhood dreams. Oh, and you get to watch the movie at the end too. \$160 / secretcinema.org







#### DINO SNORES

Sleepovers in the Natural History Museum are now available for adults, with booze, tasty insect snacks, film screenings and science shows before bedtime.

#### REDDIT.COM/R/ WRITINGPROMPTS/

This subreddit rids aspiring scribblers of writer's block, with suggestions such as "A fairytale written by Donald Trump."

#### CYCLE REVOLUTION

To celebrate the cycling boom, the Design Museum is holding an exhibition about our favourite two-wheeled transport. Angry white van men need not apply.

#### CLICKHOLF

The Onion's parody of Buzzfeed is home to headlines like 'You'll Cry Because This Man Is Chinese and 'This Man Ate Nothing But



#### UK DRONE SHOW

Fans of everything UAV will be flocking to the Birmingham NEC on 5-6 December for this inaugural show. It promises drone demos. pilot training and, best of all, the chance to fly around a First Person View (FPV) droneracing course. We've booked our slot; see you in the queue. ukdroneshow.com



#### **DISMALAND**

In the bustling artistic hub of Weston-super-Mare, elusive street artist Banksy has created his own twisted take on Disneyland. Dismaland is a pop-up exhibition or 'bemusement park' featuring works by artists such as Damien Hirst and live music from Massive Attack, among others. £5(\$11) / dismaland.co.uk



#### ARCELOR-MITTAL ORBIT

For three years since the London Olympics ended, the Arcelor Mittal Orbit sculpture has been kicking its heels in Stratford with nothing much to do. So it's being  $turned\,into\,the$ world's longest tunnel slide. Did someone make Richie Rich the mayor of London while nobody was looking? £10(\$22)/ arcelor

mittalorbit.com

### STUFF IN THE FUTURE

#### JIBO

This 'family robot' is a bit like a supercharged Siri or Cortana that tilts, rotates, takes photos and issues reminders and updates. He won't cook, mind.

#### GRAPHENE

Graphene is a form of carbon 207 times stronger than steel and a nearperfect electrical conductor. Is the graphene age upon us?

#### HYPERLOOP

Elon Musk wants to put you in a tube and accelerate you to 760 miles an hour. We told you not to mess with Elon, but would you listen?.

#### TESLA POWERWALL

Musk is a busy chap. He's also proposing a rechargable lithium ion battery to take your home off the grid. Hmmm...

#### PS NOW

PS Now lets you rent and stream PlayStation games directly to a console, TV or Blu-ray player. This is surely a little taste of the future of gaming.

**Photos** Sebastien Klein, Caren Hartiey, Al Overdrive

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### STUFF TO PLAY WITH

### BBC MICRO:BIT

When we were in the first year of big school, the only things we got given for free were wedgies by the bigger kids. These days? They're actually handing out free computers in the classroom. Sure, they're hardly MacBook Pros, but the BBC micro:bit that all Year 7 kids will get early next year is meant for messing about with and learning how to code, not editing photos or knocking up a short film. Think of it like a digital paintbrush – a tool to create. But don't worry, it's not just the kids who get to have all the fun. You'll be able to buy one yourself from microbit.co.uk a little later.



#### HACKABALL

The successor to 'funducational' toys like the Rubik's Cube, this smartball can be programmed by its accompanying iOS app to create new games. With sensors that can tell when the ball's been thrown, shaken or dropped, plus a variety of colour and light patterns, it's not one the kids (or the cat) will tire of quickly. £75(\$160) / hackaball.com



#### NINTENDO NX

We really hope this will be amazing, but right now we know very little about Nintendo's forthcoming NX console. It won't run on Android, it will probably feature a new open-world Zelda and Pikmin 4, and it's set to be unveiled next year. One thing about the Wii Ū's successor is most certain: Ninty needs it to be a hit.



#### **BEYOND123 HELICONE**

Based on mathematical concepts like Fibonacci numbers that we vaguely remember learning about in school, this addictive piece of 'playable art' turns from a helix into a pine cone with a flick of your wrist. If you need an emergency icebreaker for when the in-laws come over, this could just be it. £70(\$150) / amazon.co.uk



#### HAWK-EYE & GOAL-LINE TECHNOLOGY

Aside from the Pope and Matt Le Tissier, pretty much all human beings are fallible. While mishaps like Stevie G's title-losing slip will always remain hilarious, ghost goals, matchpoints and wickets are less so. Thanks to Hawk-Eye and other such tech, these refereeing errors just don't happen any more.

#### 2006 PS3

This was the point when consoles went from being games machines to full home entertainment hubs.

#### 2007 APPLE iPHONE

We're gonna go out on a limb here and say these things



#### 2008 T-MOBILE G1

The first Android phone had a full QWERTY keyboard. Now Android powers 80% of all phones.

#### 2008 SPOTIFY

Really? Nearly all the music ever, available to anyone, whenever? See you later, record industry!



### PANASONIC G1

A DSLR in a compact body? Photography would never be quite the same again...

#### 2010 APPLE iPAD

People used to laugh at the name and make *Trigger Happy TV* jokes... but who's had the last laugh, eh?



#### 2013 GOOGLE GLASS

A smart move by Google, to persuade us it didn't have a clue what it was doing.

#### 2014 <u>OCULUS</u> RIFT

version is amazing. Prepare for a VR revolution.





#### BMW i8

future looks, the i8 has coaxed petrolheads into changing their minds about being so awfully beastly to the environment.

#### OPPO PM-

Oppo normally makes phones and Blu-ray players; but anything Dr Dre can do, it can do better. Really quite a lot better. The MRT has never sounded so good.



#### **LEICA Q**

Compared to the \$11,510 Leica M. the full-frame O seems positively affordable... but then, affordable doesn't mean the same to Leica as it doesn't to everybody else. This is a compact camera that costs nearly \$8000. Look at the pictures, though, and you'll see exactly where that money went. \$7760 / leicacamera.com



### CLEARAUDIO OVATION

With carefully balanced weights and painstakingly positioned belts, high-end turntables often look more like lab experiments than music machines. By contrast, Clearaudio's Ovation looks surprisingly sensible. Don't let those looks fool you, though: it's crazy for your vinyl collection. £5995(\$12,860) / clearaudio.de



#### **FORD GT**

~~~~~~ We waited 10 years for a seguel to the original Ford GT, but it's been worth it. The new GT is a roaring great wedge of speed, muscle and racing stripes. You can't afford one, but if you're an Xbox gamer you'll actually be able to drive the Mk II before it even comes out, in Forza Motorsport 6. £250,000 (\$536,000) / ford.com









#### CATALYST APPLE WATCH CASE

Your Apple Watch might let you send your heartbeat to someone but if a jealous Android Wear fan pushes you in a canal it's game over. This waterproof suit of armour gives it Jason Statham toughness - and nobody would dare push him in a canal. US\$60(\$84)/

catalyst lifestyle.



#### **LIFELINE**

The only game for the Apple Watch worth playing, Lifeline tasks you with trying to save a stranded astronaut, one message at a time. It works in real time, so if Tyler has to trek across a crater. you'll have to wait for him before you can carry on. And what comes to those who wait? Very good things. \$1.28 / iOS



#### APPLE WATCH

It's by no means essential, but every time we get a calendar notification or an email or catch a train or start Strava without having to use our phones, it proves itself that little bit more useful. It has some stiff competition, but this is still the best-looking smartwatch you can buy. from \$798 / apple.com/sg



#### **HTC VIVE**

After decades of Console War. virtual reality is the next great battleground and Oculus Rift and PlayStation VR are major players. But with motion sensors that let you walk around inside games, the Valve-engineered Vive is the virtual reality headset that's top of our most wanted list. Especially if it comes with a copy of Portal 3. \$tba / htcvr.com

### STUFF TO SAVE THE WORLD

#### CITIZENFOUR

An Oscar-winning doc about Edward Snowden's spying revelations — this is what the term 'eye-opener' really means.

#### HARLEY-DAVIDSON LIVEWIRE

The future of electric motorbikes: it's going to be hair-raising.

#### VW XL1

Billed as the most aerodynamic car in the world, it's the vehicle most likely to influence what we drive in the future.

#### DARPA ROBOTICS CHALLENGE

This talent show for 'bots featured some truly stunning works in progress.

#### **TESLA MODEL S**

The sexy Model S has wrestled the reputation of electric vehicles away from the G-Wiz and the milk float.

#### HIVE.CO.UK

Online bookseller Hive now sells e-books, CDs and DVDs. And it helps support real, local shops. Remember them?



# STUFF TO WEAR



#### MICROSOFT HOLOLENS

An AR headset that projects high-def 3D holograms into your eyes, the HoloLens promises to change gaming, entertainment, learning and, well, everything.

#### SENA 10C

This Bluetooth headset for motorbike helmets has a 1080p camera built in, so you can grass up that Audi that cut you up on the bypass. Visionary.

#### LYLE & SCOTT CONTACTLESS JACK

This coat has an NFC chip in the cuff, so you can wave your wrist over card machines like a Jedi and you'll pass serenely through.

#### IGROW I ASFR HFI MF

Why would you want to wear a mad scientist helmet that shoots lasers into your scalp for 25 mins a day, every other day? Why, to re-grow your hair, of course.



#### GARMIN FENIX 3

You wouldn't normally go down the pub wearing your triathlon kit (most have an unwritten 'no wetsuits' rule anyway), but the Fenix 3 is a fitness watch you can easily wear every day. Plus it means you'll be ready if you end up in an impromptu post-pub 10k. \$629 / fenix3. garmin.com



#### **AMPSTRIP**

Take wearable tech to its logical conclusion and you get the Ampstrip – a heart-rate sensor that literally sticks to your body. It's light, with a seven-day battery life, plus it's waterproof so you can wear it 24/7 and not worry about it malfunctioning in your postworkout shower. US\$150(\$210) / ampstrip.com



#### GOPRO HERO4 SESSION

GoPro's mini Session is a marvel of so-tiny-itlooks-likeyou-couldswallow-it-andfilm-your-owninternal-organs engineering. It's the lightest and smallest camera GoPro have ever made – in fact, you'll probably forget you're wearing it. \$190 / gopro.com

> SLEEKER THAN A FORMULA 1 CAR



### STUFF TO WATCH



#### **STEVE JOBS**

He may have been the tech messiah, but Steve Jobs is generally agreed to have been quite tricky to live with. Who better, then, than Aaron Sorkin to write his biopic? Fast-talking sharp-edged and Fassbenderstarring, this thriller is going to blow 2013's Ashton Kutcher vehicle away. Out 21 Jan / steve jobsthefilm.com



#### SPECTRE



#### THIS VIDEO OF ROBOTS FALLING OVER

Worried about robots taking over? Allay your

over? Allay your fears by watching some of the world's most advanced 'bots taking a tumble while trying to do things as simple as just standing up. If it proves anything, it goes to show slapstick will live on, even if the human race doesn't. bit.ly/clumsybots



#### LIMMY'S VINE FEED

Much of Vine is taken up by American téenagers making the same bad jokes over and over again, but Limmy's nightmarish characters, bizarre catchphrases and recurring sketches turn the six-second clips into an outlet for some of his most LOLworthy creations. vine.co/limmy



#### **NETFLIX**

If you're not into the endless selection of quiz shows fronted by Dara O'Briain that broadcast TV offers, on-demand is where it's at. Netflix is the king, with a simple menu and a decent library of boxsets and recent-ish films. But its real triumph is the shows made in house, like Bojack Horseman, which you won't find anywhere else. netflix.com







# LAST WEEK TONIGHT

Not long ago Russell Brand was the only Brit Americans paid any attention to, but fortunately they now listen to John Oliver too. His satirical oneman show can be a touch formulaic at times, and some of the more US-specific references don't land for us limeys, but when it zings, it zings like a good 'un. hbo.com



### OURSCREEN

It can be pretty frustrating when you can't find anyone to go and see Mega Badger vs Giant Capybara: The Return, so why not put on your own screening? Ourscreen is like Kickstarter for cinemas. Pick the film, choose a venue, and if enough people share your taste and buy tickets, the screening goes ahead. ourscreen.com



Yes, we know he's a lawyer — but this gritty and dark TV show from the Marvel universe is a shining light in the Netflix library. The whole thing is worth watching just to see the 'man without fear' take on henchmen in the now famous hallway scene.

marvel.com/tv/



#### THIS VIDEO OF AN EAGLE ATTACKING A DRONE

If the Civil Aviation

If the Civil Aviation Authority really wants to stop drones flying close to airports, perhaps they should employ this eagle as a security guard. The drone's props are no match for the bird's talons as it crashes to the ground in a sorry heap. Nature 1, technology 0. bit.ly/eagledrone









#### **GOOGLE CHROMECAST**

It's amazing that we're still using remote controls. What are we, savages? The Chromecast has a winning combo of tiny price and huge convenience. putting apps like Netflix, YouTube and iPlayer on any TV, controlled by your phone. You can even mirror your Android device on the big screen. \$50 / google.com.sg



#### **MICROSOFT** SURFACE PRO<sub>3</sub>

The closest anyone has ever come to making a device that can replace both your laptop and your tablet in one is Microsoft's stunning Surface Pro 3 – the Wash 'n' Go of gadgetry. Just don't take it into the shower with you – one of the few things it isn't is waterproof. \$1248 / microsoft. com/en-sg



#### **SAGA**

Most respected sages of nerddom who've read Saga will tell you it's the greatest comic in print at the moment. For very good reason: it's got the best bits of Game Of Thrones and Star Wars, intergalactic xenophobia and a very cute horned baby. There are five volumes, so get reading. US\$12(\$17)/ imagecomics.com

through Twickets, which limits the sale to face value, and remove touts from your life.

#### LG G FLEX 2

LG's bendy blower has a self-healing skin – the kind of innovation that we want to see more of, not just tech for tech's sake.

#### KANEX **GOBUDDY PLUS**

Who knew a Lightning cable in a bottle opener would be such a useful invention? Drink and charge at the same time - perfect night in.





WHAT'S THE DIFFERENCE BETWEEN A GADGET THAT FEELS
LIKE AN EXTENSION OF YOUR BODY AND ONE THAT GETS LEFT
IN YOUR KITCHEN DRAWER? THE ANSWER IS NEARLY ALWAYS
BRILLIANT DESIGN. SOME THINK THIS JUST MEANS LOOKING
PRETTY. BUT AS THESE MASTERPIECES SHOW, THE BEST TECH
IS AN INGENIOUS ALCHEMY OF FORM AND FUNCTION...



#### B&O BEOLAB 19

Who's more important – the designer or engineer? B&O reckons this wireless subwoofer proves that both are equals. Rather than unleash its designers to create sculptures that would give its engineers migraines, it puts both teams together early on to make sure they're following its 'form follows function' principles. So while its dodecahedron shape means it'd look at home at the MoMA, it can also disperse the bass better without colouring the sound. \$5500 / bang-olufsen.com



## GRAMOVOX FLOATING RECORD

"I always felt that watching a record spin is just mesmerising," says Gramovox co-founder Pavan Bapu. So he made sure he'll be forever stuck in vinyl trance by crafting this vertical record player. It's not the first sound spinner to do it (Sony's PS-F5 got records standing up in 1983), but it is especially elegant and user-friendly. It comes with its own cartridge and speakers, which means no fiddling about with a phono preamp. \$US400(\$555) / gramovox.com

#### DEVIALET PHANTOM

Ah yes, the mysterious, shiny orb trick. Audiophile gear loves to adopt an arcane shape before talking about 'diffraction' and 'audible spectrums'. But the Phantom is a Bluetooth speaker that's capable of producing 105dB of sound from one metre away. That's the maximum legal loudness for a nightclub, from a speaker that's barely bigger than a bowling ball. How? To produce low frequencies usually only possible on much bigger speakers, the Phantom creates a high internal air pressure equivalent to the acoustic energy of a rocket launch. This ensures that, when fed the hi-res music it craves, the Phantom's side-firing bass drivers flutter dramatically like tiny wings. Looking like an EVA Pod isn't without its benefits either - this ensures omnidirectional sound that never leaves you 'off axis'. The gadget Mother Hen might just have laid her golden musical egg. from \$2990 / devialet.com

#### THE MODERN CLASSIC







EAMES LOUNGE CHAIR 1956

#### DAVONE RAY-S

Any design that mimics an all-time classic like the Eames lounge chair runs a serious risk of looking like it belongs in Etsy's kitchest corner. Not these curvaceous, hand-crafted speakers from Denmark, though, which combine beechwood cabinets with elegant steel stands that will perfectly match your carefully crafted midcentury manor (or your Ikea Poang Armchair, at the very least). At only 29in tall, they're perfect for low-ceilinged city flats too. Just make sure you remember not to slump onto one after a hard day's graft. \$US8600(\$11,950) /

davoneaudio.com



#### UE ROLL

If most hi-fi hails from the 'cat' school of design (elegant, if not exactly playful), the Roll is a bearded collie licking your face with its user-friendly enthusiasm. The Roll's shape ensures that it throws out a 360° field of sound, making it an ideal picnic buddy. A built-in bungee cord and waterproofing (up to 1m) mean it's perfect for shower karaoke too. Add the stain-proof fabric face, and you have a travel companion that's more loveable than a Pomeranian.

\$149 / ultimateears.com/en-sg



#### COPLAND DA 215

For a company that has the word 'listen' splashed across its homepage, Copland is surprisingly keen to please your eyes too. The Danish audiophiles (unrelated to the Stallone film) have been crafting hi-fi since amps were built like tanks and looked like, well, this. The DA 215, a DAC, preamp and headphone amp for polishing digital files played from your PC, has it all: clean lines, weighty knobs, and the mysterious glow of valves incarcerated in a musical prison.

\$3860 / copland.dk



### TWO

0

# Y SPEAKER

"We had to work with a maximum acoustical volume of six litres, which is 20 times less than the volume of other speakers that reach the Phantom's power. The shape is a response to these acoustical challenges."

"The sphere has always been known as the perfect shape to reproduce sound, so we made sure to give the Phantom an edgeless design. There is absolutely no space left to add anything else inside the Phantom." Phantom."

"The design of the Phantom's tweeter was inspired by 'cymatics'. The word comes from the Greek for 'wave' and is a technique that allows soundwaves to affect matter and create some amazing shapes."



THREE



shutter release."

a piece of technology."

#### LYTRO ILLUM

You probably think light bounces off things and lands in your camera and makes a picture, but actually it only appears to move; in some weird sense, the light landing on your camera's sensor is there permanently, but it's also never there, and... we need a lie down. Okay, that's better. So. while most cameras capture a flat plane of light that just looks as though it has depth, the Illum captures more information - real depth. In this multi-dimensional future, time can be rewritten. Pictures can be refocused after they've been taken. How? That serious-looking cylinder looming out of the Illum's forward-leaning body isn't a lens; it's a container for hundreds of lenses, capturing information from many perspectives and focal lengths, building a huge image that is simultaneously in and out of focus, at the same time. Depending on who's looking at it. Time for another lie down. \$2488 / lytro.com



# DIGITAL BOLEX D-16

Some designs are so iconic it's best to let their retro goodness shine through. The original 16mm Bolex camera almost single-handedly sparked the rise of indie filmmaking in the '60s; since this digital version arrived in 2012 it's been riding a tidal wave of nostalgic goodwill, and it's easy to see why. It can shoot 2K films at 24fps, is compatible with old C-mount lenses and has that 'pistol grip' for ultra-steady shots. from \$US3000[\$4170] / digitalbolex.com



#### LOMO'INSTANT BOSTON

Not all instant cameras are as well built as a bag of crisps. The Boston may be plastic, but it takes the instant into uncharted realms of desirability with its clean lines and bright paint job. In the box are fisheye, portrait and close-up lenses to complement the built-in wide-angle, and there are experimental options galore, including unlimited multiple exposures and flash filters for adding psychedelic spice. \$248 / lomography.com



#### PANASONIC LUMIX GM5

If the Leica Q (see right) is a little black dress, the GM5 is a really great pair of trainers. Not quite as chic, not such a special occasion when you take it out. But actually, the design is so nice that it goes with pretty much everything, and it's affordable enough that you'll take it everywhere. Plus, you can accessorise it with your wardrobe of Micro Four Thirds lenses, making a pocket-size camera as versatile as a DSLR. \$655 (w/kit lens) / panasonic.com.sg



# P A N O N O E X P L O R E R E D I T I O N

We've been waiting with cupped hands for this panoramic ball-cam to arrive since it first hit Indiegogo in January 2014. A limited batch of 1000 are finally shipping, and the final design includes 36 fixed-focus cameras, which automatically stitch together photos into a 360° panorama when you throw it in the air – a unique alternative to flying a drone over your garden party. €1500(\$2370) / panono.com

#### LEICA O

The word 'luxury' is often mistranslated as 'useless and wasteful': iPhone cases carved out of fossilised dinosaur spleen, car seats stitched from rare marmosets. True luxury is demonstrably better than the things around it, and the Q is a masterpiece of quiet luxury. Simple, well-made dials change the main variables easily and effectively: a small but powerful viewfinder frames your shots; a full-frame sensor and superb optics turn them into beautiful images. You could make one from diamond-carved mammoth tusk, but you couldn't make it any more desirable. \$5990 /

leica-store.sg

#### THE MODERN CLASSIC



**INSPIRED BY** 



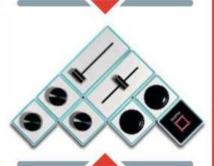


LEICACL 1973



#### MISFIT FLASH

Wearable tech needs to be actually wearable. Not Google Glass wearable, where everyone who sees you wearing it stares like you've got no trousers on. You should be able to put it on and forget about it, like you do with your trousers. That's the thinking behind Misfit's Flash, which you can wear on a wristband, clip to a keychain or stuff down your sock and it'll count calories burned, tally up how many steps you take and work out how well you sleep. \$70 / misfit.com



#### PALETTE

Good design isn't always about rigidly dictating how something should look and function. Not unless you work for Apple, anyway. Palette is a modular system of buttons, dials and sliders, all connected magnetically around a USB brain with an OLED screen. It means you can turn your Photoshop sliders into tactile controls, or the dials in your music production program into real, tweakable knobs. The customisable layout puts you in the designer's seat. from US\$200(\$280) / palettegear.com

#### APPLE WATCH **EDITION**

If it's what's inside that counts, in horological terms the Apple Watch is unremarkable. With no movement or 'complications' there's little under the sapphire crystal screen to discuss, but it's what Sir Jony and co have done to marry the old and new that makes this most stylish of wristputers stand out. Apple's first smartwatch keeps the traditional crown but gives it a new job: it now navigates the Watch's globular app cluster, zooming with a twist, and taking you back to the homescreen with a press. Rather than a window on the back to examine the workings, there's a heart-rate sensor, and its Taptic Engine turns vibration alerts into well-mannered taps on your wrist. Attach a rubber sports strap and it's a sleek health tracker; dress it in leather and you might get asked to turn left when you board your next flight. And you wouldn't get that wearing a Pebble, would you? from \$15,000 / apple.com/sg



#### THE MODERN CLASSIC



INSPIRED BY UAUAUAUAUAUA YAMAHA SY-1 1974

YAMAHA YC-10 1969

# Y A M A H A R E F A C E Y C

The music industry loves a bit of nostalgia, although obviously it's not as good as it used to be. If the option to use something vintage is there, they'll take it. If they catch sight of an opportunity to reform something, they'll do it. Yamaha is no different and the YC is part of its Reface range - a remake of four old synths with newfashioned bits added. That means the YC will make organ noises straight out of the late '60s, while being equipped with all the necessary outputs to play straight into a PC or hook it up to the accompanying iOS app. US\$500(\$695) /

yamahasynth.com



#### HEIMPLANET FISTRAL

Normally, if a tent doesn't collapse on your face and keeps your pants dry it's had a successful day tenting, but any serious camper knows the bits before and after that are just as important. Heimplanet threw out the irritating poles that come with most tents, replacing them with inflatable beams. Its first blow-up tent was the sci-filooking Cave, but the dual-chamber Fistral is a more lightweight bundle. €400(\$630) / heimplanet.com



#### CRANK BROTHERS Y 1 6

If something has a lifetime warranty you can be fairly sure it wasn't knocked up in somebody's lunchbreak. That kind of confidence only comes from good design. The Y16 is a clever take on the standard Y tool, with 16 different gadgets built into a pocketable metal frame, including all you need to fix most issues out on the road. It's no coincidence that it looks like a pedal, either; that's how Crank Brothers made its name.

€50(\$80) / crankbrothers.com



# **3 CROWNING GLORY**"Magnifying content on a small

display is important. The Digital
Crown is a remarkable input device.
It fluidly zooms into apps and,
crucially, you can use it without
obstructing the display."

These are then precisely milled

to remove any imperfections."

THREE

# HOW DOES IT WORK?

#### 1 FIELD OF DREAMS

Buried in the Riggad's base is a coil of wire called the 'transmitter'. This has an alternating current passed through it, generating an electromagnetic field.

### 2 LIGHT OF THE CHARGE BRIGADE

Your Qi-compatible phone has another coil. When this is put inside the EM field, a current is induced in the coil, and that power goes into the battery.

#### **3** YOU'RE GETTING WARMER

Wireless charging can cause your phone to heat up a bit. This is normal, but if it gets too warm the wireless charging will stop (it'll also stop when your phone is full).



# YOUR SMARTPHONE'S GUIDING LIGHT



#### IKEA RIGGAD

If Allen keys still give you flashbacks to 'Wardrobegate'. fear not. The Riggad is a different Ikea beast – the instructions are just two steps long, and it's part of a range from the Swedish flat-packers that includes wireless charging. That 'plus' sign on the base marks an induction charging point that is compatible with any Qi-certified smartphone, which includes Samsung Galaxy models, Google's Nexus phones, Nokia's Lumias and many others. "I wanted them to blend in easily in the home," its designer David Wahl explains. "The charging pad has a simple yet interesting design that can be used in many places across the home." Ikea also offers a wireless charging bedside table and the option of converting existing furniture using the Jessen wireless charger (\$30) and Fixa five-piece hole saw set (\$5). If you dare. US\$80(\$110) / ikea.com.sg



#### HYPETEX HALO CHAIR

Formula 1 has given us many techy treats, from traction control to ABS brakes, and now it's inspired this iconic chair. It's made from the world's first coloured carbon fibre, an F1-developed material called Hypetex, and is here to show off Hypetex's potentially bright future with its terrifyingly minimalist design and disc-shaped backrest. Expect to see this chair subtly influence your sports equipment over the years. £9995[\$21,445] / hypetex.com



#### NANOLEAF BLOOM

Lightbulbs have stepped out from the cover of glory-hogging lampshades. Following Plumen's lead is this energy-efficient LED bulb, which is dimmable without a dimmer switch. Flick your light switch off and on during the bulb's slow build towards 1200 lumens and you'll lock in that level of brightness. Then stand back and admire your diodedotted bulb. It'll make your bills look good too, thanks to the use of copper rather than aluminium LED heat sinks. US\$40[\$55] / nanoleaf.me



#### MIITO

Sometimes design is about shearing away unnecessary fluff. Take kettles. Because they all look the same, we'd assumed they had reached design perfection. But Miito has refined the idea into a base plate and rod. You see, traditional kettles waste energy because we always fill them up higher than we need. But the Miito only heats the water in your cup by using an induction base to heat the rod. It's quiet and doesn't get caked in limescale either. Neato.

£80[\$170] / miito.de



#### NEST

He might not have Jony Ive's status, but industrial designer Fred Bould has been behind some major gadgets over the years, including the Roku 3 and GoPro Hero 3. None are quite as iconic, though, as the Nest Thermostat, which he helped craft with Tony Fadell, iPod creator and Nest's CEO. Its hefty metal dial has an iPod-esque click that we'd play with a lot more if the Nest wasn't so good at adjusting the temperature automatically. £180[\$385] / store.nest.com

#### JUNIPER M LAMP

The Humphry Davy mining lamp and the later carbide lamp (whose lime-based chemical reaction was used in theatre spotlights, hence the phrase 'in the limelight') both inspired the design of this wireless, portable and highly versatile LED lamp. Its handle and up-to-60-hour battery life mean it's ideal for roaming around and pretending you're a character from Great Expectations. But we'd be more likely to hang this 9in-tall beauty on our shed wall for working on 'projects' (translation: reading lots and lots of comics).

of comics). £200(\$430) **/** juniper-design.com

#### THE MODERN CLASSIC



INSPIRED BY



CARBIDE LAMP 1910



DAVY LAMP 1815



#### VW XL1

Take aerodynamic design to its extreme and you usually end up with something crazy and futuristic. The XL1 may, as our review remarked, look a bit like a sci-fi hearse, but its streamlined profile, covered wheels and lack of wing mirrors (it uses cameras) ensure that it's the most fuel-efficient production car in the world. Sadly, VW only made 200, but the German car-maker reckons it's an example of the kind of vehicle we'll all be driving in 15 years.

£100,000(\$214,500) / volkswagen.com.sg

#### JOHAMMER J1

It might look like a giant pizza cutter, but there's reason behind the Johammer's design. Its low centre of gravity and unique chassis mean there's room for enough batteries to give it an incredible 300km range. Extra sci-fi points are won for building the dash into the rearview mirrors, and for including regenerative brakes. The 14hp and 120kph top speed won't raise much hell on the motorway, but in town they'll mean more time getting gawked at.

from €22,900(\$36,150) / johammer.com

#### SPECIALIZED S-WORKS VENGE VIAS DI2

Aerodynamic drag is road cycling's nemesis. To beat it, you need a slippery crusader who was born in a wind tunnel. The Venge ViAS is that superhero. Mark Cavendish's sprinting steed is a design marvel that Specialized claims is the fastest bike in the world. As you'd expect, it's packed with aeroobsessed touches. There are no external cables, with brake lines instead routed through the handlebars and frame. The 'Aerofly' handlebars and stem, with their aggressive 'ram horn' look, keep the rider in an aero position, while the frame tubes are specially shaped to cut through the air. All of this creates a sleek eel of a bike that Specialized's wind tunnel tests say is two minutes faster than a standard bike over 40km. For weekend warriors charging around mountain roads, that's a lifetime. £8500(\$18,235) / specialized.com

#### THE MODERN CLASSIC



**INSPIRED BY** 



MORGAN THREE WHEELER 2011



AUTO UNION SILVER ARROW 1933



MORGAN THREE WHEELER 1911

#### MORGAN EV3

Three-wheelers have come a long way from Trotters Independent Traders. In 2011, Morgan re-launched its motorcycle-enginepowered classic and suddenly turned them into desirable weekend runabouts. Now they're getting a futuristic makeover with this electric version. Looking like it's leapt from a post-war cover of Popular Science, the EV3 packs enough lithium-ion batteries to take you 150 miles on a charge and promises to do 0-60 in a more than decent eight seconds. We're polishing our aluminium aviator goggles in anticipation. \$tbc (due 2016)

morgan-motor.co.uk



#### QUADROFOIL Q2A ELECTRIC

Jet-skis are old hat, and not just because of their noisy, leaky engines. This twin-seat electric craft has four foils that lift it out of the water for a smooth 'flight' at up to 40kph. The quiet, emission-free motor also means it's allowed in waters that aren't open to peace-shattering motorboats. Throw in a removable steering wheel that acts as the key, and you have the 21st century update to Roger Moore's Wetbike.

from €15,000(\$23,680) / quadrofoil.com



#### KLEPPER BACKYAK

We've seen modular kayaks before, but this takes the idea and runs several ultra-marathons with it. In its basic form, the Backyak is a two-seat carbon kayak that breaks down into two 10kg drumshaped backpacks for you to carry to remote waters. Add various accessories [from €990(\$1560)], though, and it transforms into a catamaran, toboggan, floating sun lounger or two separate mini-kayaks. There's even an optional electric motor for a spot of lazy touring.

from €3790(\$5980) / backyak.de





#### GRAVITY LIGHT 2

"Good design must primarily serve people," IBM's first president Thomas J Watson once mused. And few designs promise to serve more people than this refined version of the not-forprofit GravityLight. Here to help the fifth of the world's population who are still without electricity, it's a safe alternative to the expensive, dangerous practice of using kerosene lamps at home. Using the same working principle (see right) as the original 2013 model, it now incorporates a pulley system to ensure anyone can lift the weight and has new LEDs that double its energy efficiency. A new assembly line in Kenya will see it roll out at some point in 2016. Bravo, chaps.

gravitylight.org



#### HOW DOES IT WORK?

- 1 The user pulls up the 12kg weight using a pulley. The weight falls gently through a six-foot drop at 1mm per second.
- 2 This movement powers a drive sprocket (a wheel with teeth), which rotates very slowly with high torque.
- 3 A polymer gear train turns this into a highspeed, lowtorque output, which drives a DC generator and provides 20 minutes of light.



#### ALTAEROS BUOYANT AIRBORNE TURBINE

The 'BAT' promises to bring renewable energy to remote communities. According to Altaeros, winds that are 1000–2000 feet above ground are five to eight times more powerful than those down here — so the helium-filled BAT can produce around twice the energy of an ordinary wind turbine (and look considerably cooler doing so). altaerosenergies.com



#### DOTS BRAILLE SMARTWATCH

This Braille smartwatch uses a grid of tiny pins, which rise and fall to help the visually impaired tell the time and read messages. Previous electronic braille readers have been bulky, but the Dot shrinks the tech down for the first time and translates text from apps like Twitter or ebooks. Its creators also want to bring the tech to ATMs. Sounds a lot better than relying on Siri.

\$tbc (due December) / fingerson.strikingly.com

#### D E S I G N E R S H O R T C U T S

#### CROWDYHOUSE. COM

Buy next year's design classics directly from Europe's best indie makers at this nothing-to-do-with-Neil-Finn store. Designers are vetted by the site, so quality is a cut above the likes of Etsy.



This Ikea-bothering site lets you download furniture designs to build yourself or pick up from a local maker who has offered to laser-cut, 3D-print or build it for you. They let you request alterations too if you ask nicely.

#### OUIRKY.COM

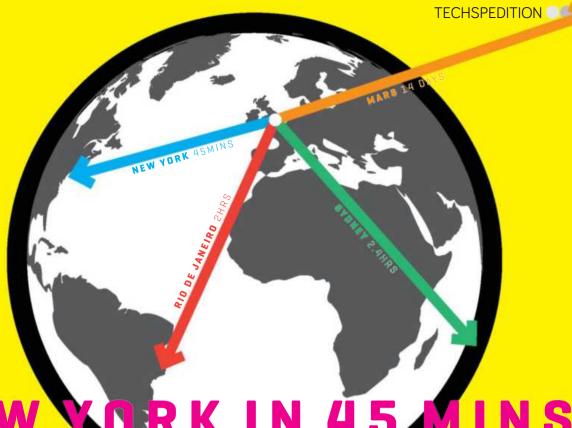
A crowd-powered gadget incubator, this site lets you take part in the design of products. If you have rendering, drawing or even legal skills to offer, you can take a cut of the revenue by offering your 'influence'.











# NEW YORK IN 45 MINS SYDNEY IN 2.4HRS MARS IN 14 DAYS THE IMPOSSIBLE ENG NE



Does the future of flight come in a can?

A British engineer says he can fly you from London to Sydney in under three hours, using a small amount of clean energy. Is the EmDrive about to change the world, or is it the biggest fraud in science? We asked the man behind it.

In 1927, an 20-year-old RAF cadet named Frank Whittle wrote his graduation thesis on the future of flight, proposing an engine that used its exhaust directly for thrust. He claimed the engine would work better on an aeroplane at high altitude, and made some radical claims about the huge speeds – over 805kph – such an aircraft could achieve.

The RAF and other establishment bodies were indifferent to the young engineer's outlandish claims; they were the stuff of sci-fi, which had itself only just been invented. Undeterred, Whittle formed his own company and worked on the engine, 16 hours a day, for a decade. It wasn't until 1941, over 13 years after the original paper, that the first jet-powered aircraft took three short hops along a runway in Gloucestershire. Today, at any given time there are more than half a million people in the air. Miles above the ground, moving at hundreds of miles per hour, enough people to fill a city eat and sleep, read magazines and watch films, in a craft that was thought to be completely impossible less than a century earlier.

If Roger Shawyer is right, he may be this century's Frank Whittle. Shawyer

claims to have invented an engine that uses no propellant, a closed box that floats into the sky without burning fuel. It is, to all intents and purposes,

DUNN

WILL

an antigravity machine.

BY

That's if it works. Where the jet engine had a handful of people who refused to listen, the EmDrive has hundreds of internet pundits who say it violates the fundamental laws of physics.

#### There's more than one way to gyroscopically levitate a cat

Okay, let's science. And because physics examples often use cats, we'll pretend you're swinging one by the tail. Obviously we do not condone the swinging of cats, but let's pretend you're an inhumane monster with an interest in physics and cat cruelty. As



you swing, you speed up through one portion of the circle, like you're swinging a slingshot. The faster part of your morally indefensible cat-swing has more centrifugal force than the rest of the swing, and you can feel it pulling your arm in that direction. You have created thrust, without expelling propellant. You are a GIT: a Gyroscopic Inertial Thruster (although given your treatment of the cat, also the other kind). Google 'pendulum car', and you'll see a toy that moves in the same way.

In the winter of 1974, the celebrated engineer Eric Laithwaite gave a lecture to the Royal Institution on just such a device (minus the cat) – a gyroscope that could propel itself, using the thrust generated by its moving mass. Laithwaite was hugely respected, but his gyroscope idea was about as well received as an incontinent walrus in a jacuzzi; so far, it is the only lecture the Royal Institution has ever declined to publish. But while the scientific establishment scoffed outright at Laithwaite's curious idea, researchers in less visible areas – namely military tech – began to look into exactly why it was impossible. One of those researchers was Roger Shawyer.

# But if the cat swings at the speed of light...

"I was working in the defence industry," Shawyer recalls, "and we were asked to determine if [Laithwaite's] theories were valid. It was a long and controversial proposal, and it was never going to happen – the laws of mechanics don't allow it." But while Shawyer was able to break Laithwaite's machine on the iron-hard laws of mechanics, the laws of electromagnetism proved more elastic. "An electromagnetic wave is moving at the speed of light. When you're working at these very high, relativistic velocities, then suddenly things that appear not to be possible become possible.

If your own research on general and special relativity goes no further than once having owned a poster of Einstein sticking his tongue out, join the club. It's a big club. In 1919, four years after the publication of the Einstein field equations, the world's foremost expert on



**Roger Shawyer** 

have to say to yourself, what happens to this momentum imbalance? It can't do nothing, maths won't allow it to. So, to balance the momentum, the cavity accelerates in the opposite direction."

# Instead of stretching, it moves

The problem is, this effect (if it even exists) is tiny. To turn it into horsepower, we need to talk about Q.

To most people, 'Q' is the gadget man in Bond movies or a potentially disastrous Scrabble tile. To engineers, 'Q' is the 'quality factor' that describes how easily a system loses energy. Engineers who build skyscrapers make sure they have a low Q — below 1 — as the system needs to be able to lose energy (like wind or earthquakes) easily, and not resonate itself to bits. A pendulum, on the other hand, has a high Q, because it re–uses energy added to its system by resonating. Cycling the energy, it loses a little at a time. A good pendulum might have a Q of 10,000.

"Now, in an EmDrive cavity, you have an extraordinarily high Q", explains Shawyer. "Typically, for our basic first-generation cavity, you have a Q of, say, 50,000. This means that these EmDrive cavities store huge amounts of energy: the energy stored in it is 50,000 times the amount that you add in one cycle. So, if you take an EmDrive cavity that has a Q factor of 50,000, and you put in one kilowatt of power inside that cavity, you are storing an instantaneous power of five megawatts. That's a small power station. So, you treat these things with respect."

Shawyer says the sheer power of these high–Q cavities is a problem for some scientists. "If you go to CERN, they have microwave cavities similar to EmDrive cavities, but they're superconducting. Their Q factors are not 50,000 but five billion. If you put a pulse of power into these cavities, the forces involved are so huge that these very large cylinders, made from thick, solid metal, stretch. The forces inside are the same as EmDrive forces. They're being stretched by the force of the electromagnetic waves bouncing up and down inside them.

"But because they're symmetrical cavities, the forces are equal at either end and so they don't move, they simply stretch. An EmDrive is a non-symmetrical cavity, and the unequal forces it produces provide acceleration. Instead of stretching, it moves."

# "It'll never work," said the internet

Opinion over whether the EmDrive works is divided into three camps: Yes, No and I Honestly Have No Idea (we're in camp three). The No camp's most

#### REFLECTOR

If a ball rolling in a tray hits one end harder than the other, the tray will move in that direction Shawyer says he can do this with EM wayes.

#### **JARGON BUSTER**

#### **EM WAVES**

Ripples in electromagnetic fields move about 20 million times faster than ocean waves. So fast, in fact, that they are subject to...

#### SPECIAL RELATIVITY

...which is tricky to explain in a tiny box. But basically it means that if you're moving at the speed of light, time stands still...

#### FRAME OF REFERENCE

...which, says Roger Shawyer, makes each end of the EmDrive a distinct object, or 'frame', which is why the drive moves instead of stretching.

#### **MICROWAVE**

An electric box for creating tasty melted-cheese sandwiches and unbearably hot soup, by bombarding them with...

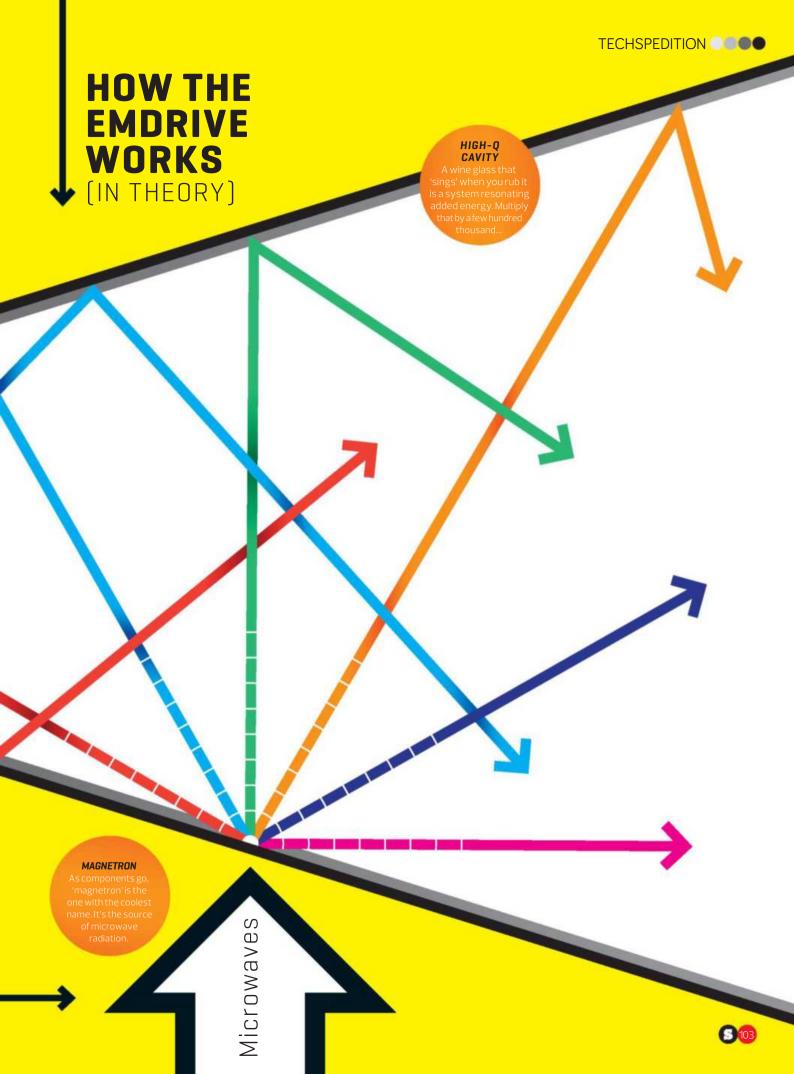
relativity admitted that it was probably just he and Einstein who understood the subject. Shawyer concedes: "If you worry too much about what an EM field is, you'll conclude that you don't know. Physicists can describe them mathematically and tell you what they do, but to actually describe them to a non-scientist is almost impossible." Well, that's a big help.

# Create an imbalance, and you create motion

Still, here's the EmDrive as we understand it: the engine is a hollow cone with flattened, closed-off ends. Inside the cone, electromagnetic waves are bounced back and forth, from the wide end to the thin end. They're moving at the speed of light, so they can't get any faster, but the tapered shape of the cone means they hit one end with more force (more group velocity) than the other. "So inside the cavity itself, you have a momentum imbalance," says Shawyer. "And you

Spacecraft with EmDrives could be a lot cheaper and a lot faster





consistent claim is that Shawyer's engine violates the law of conservation of energy. That's not simply doing 35 in a 30 zone. That's impossible.

While the majority of those writing articles about the EmDrive are keyboard warriors without physics degrees (a crime of which the author of this article is also guilty), there are plenty of wellqualified detractors, including professors, authors and NASA engineers. They say that, if an EmDrive is a reversible electrical machine that turns power into acceleration – like an electric motor – you should be able to run it backwards and turn acceleration into electricity. With everything on Earth getting acceleration from the planet's gravity, they say this should mean an unplugged EmDrive acts as an effectively endless free power generator. Which, given that the world's energy problems still exist, it obviously doesn't.

# "It sure looks like it works," said others

The thing that's really getting the No camp worked up is, people keep building EmDrives and getting results that look a lot like thrust. Shawyer's own tests were backed up by a team from China's Northwestern Polytechnical University in 2008, and in 2011, engineers at NASA's Eagleworks facility - a highly specialised lab built to test things that are So Crazy They Just Might Work revealed they were testing an engine that operated on the same principle. Earlier this year, they too announced that they'd recorded thrust from their drive, and shortly afterwards a team from the Dresden University of Technology announced that they, too, had built an EmDrive (using a microwave oven) that appeared to work.

What's more, amateur scientists are beginning to experiment in their garages and kitchens — watch our for those megawatts, guys — and they too say their home—made EmDrives are pushing. At the moment the push is fractions of a gramme, but it's a repeatable result.

# So, what time does my flying car arrive?

If — and it is an 'if' the size of a morbidly obese whale — the EmDrive works, there is still a lot to be done before your silent, emissions–free plane takes off.

At the top of Shawyer's wishlist is "a high-temperature superconducting material". By making a superconducting EmDrive, Shawyer says he can increase the Q factor from 50,000 to 5bn, as the scientists at CERN did: "The thrust you can get out of it is proportional to the Q of the cavity, so you multiply the thrust by 100,000 times." This takes the power of the engine from a barely feather-raising 300mNs per kilowatt to "about three tonnes per kilowatt". That's your flying car, powered by a fairly decent microwave oven.

"We're currently using a material called YBCO — yttrium barium copper oxide — which is highly superconducting at liquid hydrogen temperatures [-253°C]. That also means that the liquid hydrogen used to cool the cavity can be used to generate the electricity in a fuel cell. So the only fuel you'd put into a personal air vehicle would be liquid hydrogen." Oh. So... he really does see us in the flying vehicles sci-fi promised?

"'Yes. You won't be driving around in traffic jams any more; in 20 years' time you'll be using personal vehicles with vertical take-off and landing. Timescales are subject to politics and commercial interests, but... we will almost certainly be flying something within a couple of years."

"This is what I mean," adds Shawyer with the air of someone who has said this to many disbelieving people, many times before, "when I say the world doesn't know what's going to hit it."

#### "Most of the modern world isn't understood by most of the people living in it"

A true working EmDrive could power a new age of cleaner, faster transport, dramatically altering the way things are shipped and where people work. It could send craft further and faster into space than ever before; most estimates for a trip to Mars are six to nine months (it's a really long way), but an EmDrive craft could accelerate for most of the journey, dramatically increasing the achievable speed. You could be on Mars in two weeks. But would any aviation company take a punt on such a device?

"Put it like this," says Shawyer. "In 2009, under government instructions from the UK and under a government export licence called a TAA, all the design info for a flight EmDrive was transferred to Boeing. I'm allowed to say that, it's in the public domain; but five years ago, Boeing had a flight thruster design. At around the same time, China announced that they had an EmDrive with enough thrust to keep the International Space Station aloft. This is happening — it's not something that might possibly happen in the future, it is happening now."

Believe him or not, it's fun to imagine he's right  $\odot$ 

# INCREDIBLE UTILITY OUTSIDER DEVICES

In patent law, Incredible Utility describes something that can't be patented because it's too good to be true. In other words, in order to get a patent for something, the guy in the patent office has to believe that its useful function actually exists. Inventions rejected (and in all probability, rightly so) on the grounds of Incredible Utility include a perpetual motion machine, a cold fusion process and a method for changing the way foods taste using a magnetic field. If that last one could lead to a Baconana, we'll need more scientists working on it.



#### STARLITE

A synthetic material invented by amateur chemist Maurice Ward appears to be capable of withstanding more heat than any other known material — one test involved a laser beam that could vaporise tungsten. Ward died in 2011, though, and it looks as if he may have taken the secret of Starlite with him.



#### THE E-CAT

Italian inventor Andrea Rossi claims his 'Energy Catalyser' is a low-energy nuclear reactor that turns nickel into copper, producing heat as it does. As with all 'cold fusion' claims, the promise of abundant clean energy sounds amazing but the reality doesn't hold up to scientific investigation.



#### THE WEB OF POWER

Imagine a system of balloons, similar to Google's Project Loon, which distributed not just wireless internet but wireless electricity across the planet. This was the vision of 19th century sparkmaster Nikola Tesla, who claimed to be able to power hundreds of lightbulbs from miles away.

# 

**EVERYTHING YOU NEED TO KNOW** ABOUT THE LATEST IN TECH



instagram.com/stuffsingapore



### **DIVE DIVE**

Rather than ballast tanks, the Dragon has six electric thrusters in order to descend to the 'edge of darkness'

Why wait for space tourism when you can be an aquanaut today? Stuff takes a dive in the world's most advanced personal submarine

[ Words Richard Taylor ]

ringing up the subject of Bond villains at the launch of a personal submarine might sound clichéd. But in the case of DeepFlight's Dragon, it's justified. The California-based company is run by Graham Hawkes, who designed and piloted the Bond-bothering

Mantis submarine in 1981's For Your Eyes Only. Some 34 years on, his firm is taking Stuff on one of the first Dragon 'flights' – with less nefarious ambitions but just as much stardust.

The DeepFlight Dragon isn't the first personal submarine, but it does uniquely promise to let you 'fly' with sea life with virtually no pilot training. Why not just go scuba diving instead? For starters, not everyone wants to hump an oxygen tank on their back and inhale through a rubber tube. And more importantly, scuba doesn't offer anything quite like a hovering craft that lets you give fish a very real UFO experience.

#### FLYING LOW

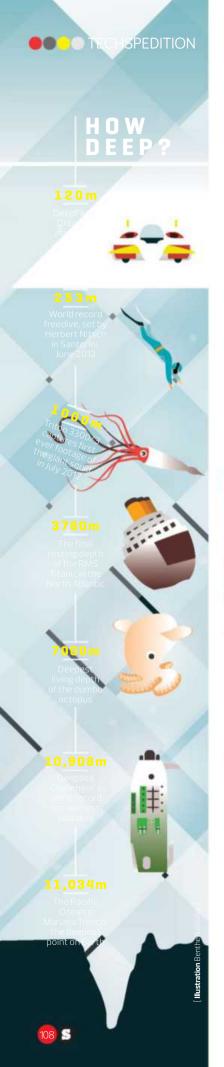
The DeepFlight Dragon is no flight of Kickstarter fancy – it comes from serious submarine heritage. For the past two decades, the family-owned concern run by British-born sub pioneer Hawkes has been busy developing what he calls "the most advanced and high-performance personal submarines on the planet". It has been redesigned

no less than five times. Its predecessor, the Super Falcon, was unveiled a few years ago, but just three units were made to order.

For a certain species of billionaire, the superyacht isn't complete without a submarine that looks like a jet fighter. Sadly, the older Super Falcon doesn't just look like a plane — it also requires the services of a trained pilot. Its design is based around the aerodynamic principles of lift and drag, so it can perform jet-style banks, flips and barrel rolls, all some 120 metres (400 feet) down.

**ENTER THE DRAGON**But now the DeepFlight founder says he's ready to venture into another realm entirely. The Dragon, available to preorder for a heady US\$1.5m(\$2.1m), isn't a race machine, cruising at a top speed of just four knots (around 8kph). But it does have two unique features. Instead of ballast systems, which conventional subs use to help them drop, the Dragon dives using vertical thrusters. This lack of ballast allows it to have a fixed 'positive buoyancy', ensuring it always floats back to the surface. These thrusters also give it the ability to hover, drone-like, so you can hang out by a reef, admiring the marine life nestling within.

Most importantly, it's very easy to control.
"This is the game changer," Graham claims. "It's so smart that even a complete idiot will be able to use it safely." As luck would have it, there's one on hand to put that claim to the test.



#### SPLASH TEST DUMMY

And so I drive three hours north of San Francisco to the watery playground of Lake Tahoe, in the Sierra Nevada. As I approach the shoreline, it comes into view: the Dragon's slender form is more futuristic F1racer than classic submarine, albeit with hemispherical canopies enclosing both pilots in their respective compartments. To stabilise the craft, there are four cylindrical, quadcopter–style vertical thrusters integrated horizontally at each edge of the drivetrain. Powering them all, a six–hour lithium battery — that's six hours assuming you're not trying to chase a pod of dolphins.

Today my adrenaline is pumping hard — I'm getting a chance to actually pilot the sub. With a quick onshore briefing, it really does seem very straightforward: one left-side vertical throttle to control downward thrust; and to my right, a joystick for manoeuvring forward, reverse, left and right at any given depth. Mounted directly ahead of me outside the cockpit is a unit housing a monochrome display sitting between a manual depth gauge and compass. And that's it. No futuristic touchscreens. In some ways it reminds me of a Lotus: a luscious sporting exterior, but with the most basic of cabins.

As this is one of the inaugural voyages, the obvious 'what if?' questions race through my mind. Being

from the gantry, and we chug gently away from potential hazards — boats and other people, most of whom look suitably curious. The heat beats down on our domed greenhouses. No issue: the oxygen cascading through the air vent keeps me cool. "You ready, Jester?" asks Graham through his two-way Bluetooth headset.

Graham radios up to his team through the marine VHF system. I crane my neck to look up, my view of the receding surface unimpeded through the glass canopy as we sink into the Tahoe waters. And then the bubbles stop, and suddenly we are still. "See?!" exclaims Graham. "We're hovering. That's the most technical of challenges and we've overcome it."

#### SUNDAY DIVER

Now call me old-fashioned, but when I'm in a sub, I want to go deep. Not simply two feet under, even though I recognise this lake is hardly a reef-laden paradise. Graham senses I don't share his sense of boyish excitement at the hovering feat, and agrees to venture deeper — with me in control.

And so I thrust the lever forward — a little too aggressively for Graham, who doesn't relish his million—dollar baby plummeting to the lake floor with a maniac at the helm. The LED number counter climbs as we sink, though my ears aren't popping so I'm not physically gauging the rate of



### THE BUBBLES STOP, AND WE ARE STILL... WE'RE HOVERING

enclosed in an oxygenated bubble up to 400 feet underwater is, I surmise, surely a recipe for risk. What if this prototype misbehaves? After all, only 48 hours earlier the Dragon's maiden excursion had been beset by glitches. Graham tries to reassure me. "We have backup oxygen supplies for 24 hours." And leaks? "It won't leak." Should I do anything really dumb, the veteran submariner could always reclaim control.

#### THAT SINKING FEELING

With Graham up front, I clamber tentatively into my cockpit. It feels snug, but happily I passed the height (less than 6ft 3in) and weight (under 125kg) test; this is no craft for 'people of size'.

One final piece of business to take care of before launch is call signs. Graham has sorted his already: 'Grey Hawk'. I desperately seek inspiration. 'Jester' it is, then. The platform lowers us into the water

descent. Twenty feet. Thirty feet. I look up at my depth gauge. Forty. Fifty. I bank hard to the right. "Whoa!" Graham crackles through my headset. "Easy... pull up. Pull up!"

And within seconds he's wrested back control. We stabilise, and I breathe a sigh of relief as any sniff of disaster is averted. Right now, the onboard software is still a work in progress. The market-ready Dragon will be able to tame itself, with depth sensors delineating 'safe zones'.

#### DAMP SPELLS EXPECTED

We gently ease up to the surface and cruise back to shore. I'm relaxed again, and able to contemplate the amazing possibilities the Dragon could present in more scenic waters. I imagine the scuba fraternity will scream deep blue murder. Nothing can beat the freedom of roaming free, they'll argue. And while it's true the Dragon doesn't offer the same experience, it's a far easier, more accessible and arguably safer way to explore the deeps. In the Dragon, someone with zero training can venture far longer and deeper than a recreational scuba diver.

Its current pricetag puts it far outside the means of ordinary people, but DeepFlight confirms that it has plans to make the Dragon available for rent. And who knows? With powerful, efficient motors and batteries becoming cheaper by the minute thanks to the electric car market, it's possible you'll be seeing a lot more of the Dragon and its ilk. Time to start saving.



# **GET IN THE** FLIPPING SEA

If you're looking to splash out, we've got more subs than a well-stocked bakery

## TRITON 3300/3

Triton is the grandaddy of civilian sub operations; in the summer of 2012 it achieved a world first when this model managed to film the elusive giant squid. With an operating depth of one kilometre, the Triton certainly trumps the Dragon in raw diving stats. But along with costing several million to buy, its models also need to be operated by a qualified sub pilot. With only 400 of those worldwide, you'd probably best book ahead. \$3m(\$4.2m) / tritonsubs.com



#### **SCUBSTER NEMO**

More scuba accessory than minisub, Scubster's vehicles give divers a speed boost over using traditional flippers. The original model was pedalpowered, but the firm is now raising funds on Kickstarter for this electric model, which can dive as deep as 60m. It can even do rolls and flips, for when you're cruising past a hard-to-impress octopus.

from US\$10,000(\$13,900) / scubster.org



## SEAMAGINE AURORA-3C

This pun-tastic DeepFlight rival has been in the game since the '90s, and its latest model can plunge 1.5km into the deep blue. The bulbous Aurora-3C is spacious enough for two plus a pilot, while its compact form can be plonked on a superyacht. Its acrylic dome gives you a fine view of that hammerhead heading straight for your face. from US\$1m(\$1.4m)/

seamagine.com



Though you can't quite live on this yellow submarine, it will let you stay down at a depth of 160m for eight hours. Sold by a luxury yacht maker as a little accessory to its megaboats, the sub is almost 3m high and roomy enough for five passengers plus a pilot. Oh, and there's a fridge and an onboard toilet, should the jitters get the best of you. \$poa / y.co



zing doc about it h

Normal submarines are all very exciting, until you find out you can terrorise jetskiers in a craft that looks like a shark. The Seabreacher doesn't go lower than a few feet, but skims along the surface at up to 80kph and (if you're brave) jumps vertically out of the water. There are killer whale and dolphin versions for  $dedicated \, followers \, of \, cetaceans.$ from US\$80,000(\$111,140) /

seabreacher.com



Gaming is the world's fastest-growing spectator sport, and the prize money is rising with it. We go inside an eSports team to find out what it takes to be a pro



or many gamers, the idea of watching someone else play is a little too close to the hours we spent being frustrated to tears by a console-hogging brother. But the new age of eSports is making this idea as dated as dusty game cartridges. It's propelling computer games up towards the previously unimaginable status of being the

world's biggest spectator sport.

Don't believe us? Consider the fact that more people tuned into the League Of Legends World Championship final on Twitch.tv than the number of strawberry-scoffing tennis fans who watched the 2015 Wimbledon final... or the reality that there are now 134 million eSports viewers worldwide.

And it's not just audiences that are exploding like a well-aimed plasma grenade. In April, Jordan Spieth took home US\$1.8m(\$2.5m) for winning The Masters golf tournament, one of traditional sport's most prestigious trophies. Four months later, a fiveman team called Evil Geniuses picked up a cheque for US\$6.6m(\$9.2m), equivalent to \$1.3m(\$1.8m) each, at DOTA 2's 'The International' Championship. And all without having to use a stick to hit a ball out of a sandpit.

#### **DREAM SPIRIT**

With so many people watching and so much money up for grabs, we headed to one of the few UK-based

## ABRIEF HISTORY OF eSPORTS

Milestones on the path to £4 million(\$8.6m) winner's cheques



Space Invaders Championship The first ever large—scale gaming competition. 10,000 people from across the US competed for the Asteroids cocktail table prize.



#### **World Cyber Games**

South Korea created the gaming equivalent of the Olympics. It had everything: the big arena, lavish opening ceremony and medals.



## Major League Gaming National Championships

The first major competition to focus on console games. It now includes PC titles.



#### Twitch

This Amazon-owned site allows people to watch tournaments and is ranked fourth for peak internet traffic in the US.



Pro gamers become 'athletes' Canadian player Danny 'Shiphtur' Le made history by gaining a US P–1A visa, for 'Internationally Recognized Athletes'. eSports tournaments to find out what all the fuss is about. DreamHack is a Swedish eSports organisation that is massively popular in its home country — over there, the finals are broadcast on SVT1, Sweden's equivalent of BBC One. Its first UK event was held at the Copper Box Arena in London's Olympic Park, and centred around Valve's Counter–Strike: Global Offensive, a team–based PC shooter played by an average of over 600,000 people a day. On offer to those who enter: a prize fund of US\$40,000(\$55,570), with US\$20,000(\$27,785) awarded to the winning team. Not bad for a weekend's work.

One team hoping to win the top prize was Team Dignitas, one of the ten best *Counter–Strike* outfits in the world. The team started out ten years ago when two *Battlefield 1942* teams merged together, and it now has a total of 47 players competing in nearly all the major eSports games and events. They're managed by Michael 'Odee' O'Dell, a Brit who was once a professional gamer himself. He's in charge of pretty much everything — getting the team from tournament to tournament, training them in between events, even sending out the yellow and black Team Dignitas merchandise that fans can buy online. And now he's helping us shadow the players as they battle their way through the four teams that stand between them and the \$20,000 prize.

#### KIT AND MISS

When we first meet Team Dignitas, they're half an hour away from their first-round battle against the Australian team Renegades. They're exactly as you'd imagine a team of young professional gamers: quiet and slightly awkward, but also polite and disarmingly honest. "No flame, but there are better monitors than the ones we're using here," complains Markus Kiærbye, the youngest member of the team, as if he's firing out an angry Reddit post. He's spent 30 minutes shooting bots on the DreamHack monitors provided by EIZO, but he's used to practising ten hours a day on team sponsor liyama's screens. In eSports competitions, the computers and monitors are provided by the organisers to make things fair, but you can understand Kjærbye's frustration – it's like making Lionel Messi swap the Adidas boots he trains in for a pair of flip-flops.

Despite their complaints, Team Dignitas go on to win two out of their three first-day games, ensuring passage into the semi-finals on the second day. Watching them live, it doesn't take long before we're being drawn into the thrill of it all — unconsciously slapping our foreheads when someone misses, or applauding the perfect headshot. Team Dignitas, meanwhile, appear completely emotionless — their intense concentration broken only by the occasional fist-bump from team captain Mathias Lauridsen after a victorious round.

#### THAT WAS LIQUID SNIPING!

It helps that the production standards of events like DreamHack are as good as anything you'd see on TV. Games like *Counter–Strike* have evolved to allow broadcasters access to instant replays and tactical diagrams — things you'd see if you were watching football on Sky Sports. But the real stars

"COUNTER-STRIKE WILL BE ON TV IN 2016"



are the commentators, who talk at about 250 words a minute about every element of the game, offering a level of insight that's lacking from much of the traditional sports punditry on TV. In fact, it's endearing how little concession they make to newbies. Listening to them is like watching your first episode of *The Wire* – you probably won't understand all the words they're using, but you kind of just absorb it anyway.

One of these commentators is Richard Lewis, a journalist who fell into commentating through an early love of eSports. Lewis believes that eSports is on the cusp of a major sea change; one that will see huge sponsors replacing PC component manufacturers and mainstream broadcasters showing events instead of Twitch. "What I'm worried about is big TV stations coming in and dictating to us how things need to be done," he says. "I think Counter-Strike will be on mainstream TV in early 2016. In a couple of years we will get pushed out by the mainstream guys."

In many ways, what Lewis is talking about is already happening: Team Dignitas is signed to sports agency IMG, which also manages the careers of Novak Djokovic and the Williams sisters.

#### **LOSING ALL DOPE**

The need to become legitimate to a mainstream audience is eSports' biggest challenge, particularly











## SAFE AS MOUSES... THE TEAM DIGNITAS GAMING ARSENAL



#### Corsair H1500

Communication is vital for pro gamers, so a well-made headset with a good boom mic is an absolute must. a good boom mic is an absolute must.
The H1500 also offers 7.1 Dolby
Surround sound processing, meaning
players can hear the precise direction
of gunfire and grenade drops.
£65(\$140) / corsair.com



#### **Corsair Sabre** Team Dignitas Edition

The team has its own mouse: you can change the 8200dpi laser sensor to be more or less sensitive and there are tweakable RGB lighting zones, eight buttons with Omron switches and a 1000Hz USB refresh rate. £50(\$105) / corsair.com



#### Corsair K70

Pro gamers swear by mechanical keyboards, as the keys are smooth for easy double and triple taps, and they're durable as hell. Cherry MX Red switches are considered the best, and Corsair has created contoured and textured WASD and 1-6 keys. £105(\$225) / corsair.com



#### liyama GB2488HSU-B1

This monitor is tailor-made for pro eSports players. The most important feature is response time — only 1ms, so there's basically no delay in the game and what the player sees. It's also an incredibly versatile monitor, with DisplayPort, DVI and HDMI inputs. £120(\$260) / iiyama.com

## IT'S NOT ALL COUNTER-STRIKE...

Not too handy with a sniper rifle? These elite games could make your eSports millions:



#### **League Of Legends**

The most popular PC game in the world is free to play, but LOL's incredible depth makes it perfect for eSports. Its Championship series runs all year round, and last year the final was watched by 27 million people.



#### **FIFA**

Yes, all those weekends playing FIFA online might have been time well spent. FIFA isn't anywhere near as lucrative as the top titles, but you can still win the

Interactive World Cup – last year's winner picked up \$20,000.



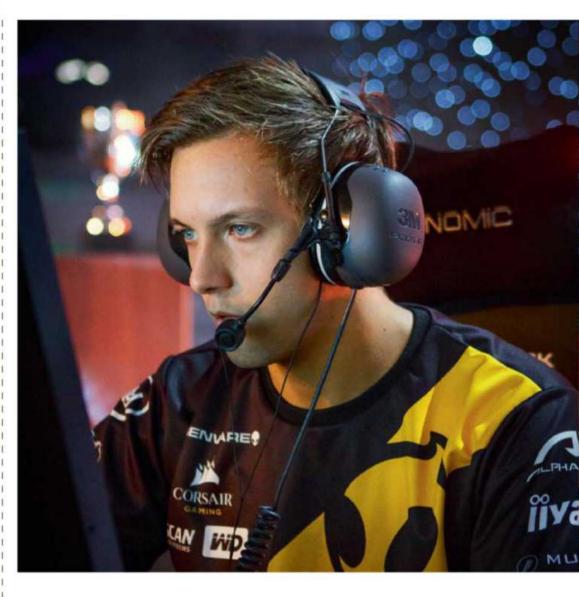
#### DOTA 2

The prize pools for the *Defense Of*The Ancients sequel are the biggest in eSports, funded by players buying in-game items. At 'The International' 2015 the total prize fund reached \$18.4m(\$25.6m), the winner taking over a third of that.



#### **Call Of Duty**

CoD has grown massively over the last couple of years to overtake Halo as the console eSports shooter of choice. Thanks to support from publisher Activision, the game is easy to broadcast and commentate on.



as that audience is fragmented across different games, events and locations. The lack of a FIFA-like world governing body is probably a good thing given football's allegations of mysterious brown paper envelopes, but it also means there aren't universal checks in place to prevent cheating, match fixing, and more recently, doping allegations.

CS: GO player Kory 'Semphis' Friesen went on record recently saying that Adderall use was rife among professional players entering major competitions. A psychostimulant usually prescribed to treat ADHD, Adderall can be abused by people who want to concentrate for long periods of time — which perfectly describes pro gamers.

Odee plays down the effectiveness of these stimulants, although he says he welcomes the idea of random drug testing in eSports. "I'm sure doping goes on but I've not seen it, and I don't want to," he says. "That said, I've always wanted random drug tests. I want the arena to be fair for everyone."

So far, only the Electronic Sports League has laid out a testing policy — it will run random saliva tests at its competitions, with penalties ranging from deductions to prize money and tournament points, to disqualification and up to a two-year ban.

#### **TOUGH AT THE TOP**

While playing Counter–Strike for a living sounds fun, the reality is that the number of professional spots available is about as limited as Formula One driver seats. There are 16 full–time professional Counter–Strike teams — with five players per team, that means there are roughly 80 people in the world who can call playing it a job. Compare that with how many professional footballers there are in England and Wales alone — roughly 4500 — and you can see how rare professional gaming jobs are.

It's also a classic catch-22 situation: if you want to compete at the top level, you need to be able to quit your job to practise, but you can't quit your job unless you're being paid by a professional outfit like Team Dignitas. LGB Female is one of the few eSports teams made up of women, but they all have full-time jobs or university studies as well. "We're working

"I'M SURE **DOPING GOES ON** IN ESPORTS"



from 8am to 4pm and then you get home, have a quick dinner and you're playing from 6pm until late in the evening," says team captain Aurora Lyngdal. Inevitably, female players also have to face discrimination. "There's a mentality that girls can't play," admits Lyngdal. "Sometimes there's a feeling that the fans don't want us to be there. That mentality needs to go away and then a lot more women will come to the fore."

She thinks it will take another couple of years for LGB Female to be competing in the same tournaments as her male counterparts. But when they do break through, they'll at least be competing in the same tournaments as the boys, unlike most sports, which are segregated by gender.

#### THE HALO EFFECT

Sadly for Team Dignitas at DreamHack London, they fell short of winning the \$20,000 prize, being knocked out in the semi-finals by their arch rivals Team SoloMid. Their consolation prize was \$3000 – not a bad haul, but also not a lot to split between five people and a manager.

Still, the team left in high spirits — it had another tournament to enter with a much higher prize pool later in the week. Performing well in tournaments is also more about satisfying sponsors than winning

prizes – SuperData research estimates four fifths of all eSports revenue comes from sponsorship.

As we tried to talk to Team Dignitas about their defeat, we were interrupted by a group of fans wanting autographs. Mostly they had T-shirts or notepads to sign, sometimes it was a tattered mousemat, but the players dutifully signed whatever was handed to them, usually without a word uttered between either party. It was noticeable that one member in particular, the Bieber-esque Markus Kjærbye, got plenty of attention from female fans.

We brought up the issue of groupies, but he was coy and tried to change the topic. Overhearing our conversation, his teammate Andreas Lindberg made a gesture suggesting the 17-year-old does OK with the ladies. Clearly, getting to play games all day is just one perk of being an eSports star.

"SOME FANS THINK **GIRLS CAN'T PLAY**"

## HOW TO BECOME AN ESPORTS PRO



#### Choose your weapon

Specialisation is key if you want to make money. The most popular games with the biggest prize pools are DOTA 2, League Of Legends and StarCraft II, but FIFA and World Of Tanks are less competitive yet still have tournaments with decent prizes.



#### Watch the pros

Simply going on Twitch can be highly educational. "You learn by watching the pros," says Joakim Karlsson, an amateur Super Smash Bros player with big ambitions. "At big events, I might get to play against a pro and learn from them directly."



#### Find some teammates

The big shooters and MOBA games are all played in teams. Head to eSports events to find people to pair up with. "There are 17 million people playing Counter-Strike alone, so you're bound to meet someone you click with," says LGB's Aurora Lyngdal.



#### **Get livestreaming**

Livestreaming can bring in revenue to help you expand, according to Tom 'Syndicate' Cassell, the first Twitch user to hit 1m subscribers. "It's easier to get noticed if you're livestreaming," he says, "and it's much better to do it live than put it on YouTube."



#### **Get scouted**

As some point you'll need to join a pro team, with coaching — a role Odee performs with Team Dignitas. "One of our players kept missing shots," he says, "and we realised it was because he was breathing too fast. We taught him techniques to control it."





## Steve Jobs\_cinema

wo studios, two directors and three stars: writer Aaron Sorkin's version of the Steve Jobs story passed through a lot of hands before arriving on our screens. With Danny Boyle behind the camera, Michael Fassbender steps in front of it as the Apple icon, portrayed during three pivotal product launches: the Macintosh (1984), the NeXT 'Cube' (1988) and the iMac (1998).

Unfolding like a stage play, the film shows Jobs to be the centre of a tornado of professional and personal drama. He battles with employees, the mother of his child... and the press, who clash with his perfectionism, jealousy and borderline God complex. Fassbender is tightly wound

and single-minded: his conviction overcomes his lack of physical fit for the part. Indeed, most of the cast seem to bring their best to the screen, with the ever excellent Kate Winslet keeping the show running as his assistant, and a heartfelt turn from Seth Rogen as Steve Wozniak.

With its sharp-tongued dialogue and backstage set pieces, Steve Jobs is too orchestrated to be the definitive take on a man's life or career, but it's obvious from early on that this is a portrait rather than an analysis. Perhaps appropriately given the subject, Boyle's film is slightly flawed but fascinating nonetheless. James Luxford

STUFF SAYS ★★★★☆



#### Terminator Genisys \_Blu-ray, DVD, VOD

Arnie takes some time off making meerkat ads to resurrect the T-800, but he's no longer the main event: Sarah Connor and a time-hopping Kyle Reese take centre stage in their fight against an OS that'll enslave all of humanity. It could be a critique of our reliance on tech, but that might be a bit generousys. Tom Wiggins

STUFF SAYS ★★☆☆☆



**Entourage** \_Blu-ray, DVD, VOD

Fans of the TV show will know what to expect from the film: a vapid, silly, dirty fantasy fulfilment about a Hollywood A-lister and his three best mates fooling around with fast cars and easy women. It is, though, lacking the charm of the best episodes, and the roll call of cameos is desperate. It would get three stars, but Piers Morgan is in it. Tom Parsons

STUFF SAYS ★☆☆☆☆



## Return To The Moon\_Elvy

The National are many things, but cheery is not one of them. No wonder frontman Matt Berninger fancied teaming up with Menomena's Brent Knopf for a record full of rasping hi-hat claps and grooves you can pull shapes to. Even if Return To The Moon doesn't always live up to its funkadelic promise, it's a lot of fun.

Unleashed from his sourpuss straightjacket Berninger flies into full-on

esoteric mode. Songs like Paul Is Alive and Silent Ivy Hotel are peppered with wry one-liners, underlined by teasing organ riffs and licks of ghoulish synth.

You can almost hear the bandmates larking about, asking, "Will we get away with this?" They absolutely second outing feels like an effervescent necessity. **Rob Leedham** 

STUFF SAYS ★★★★☆



## **Sea Of Brass**

\_British Sea Power

Foliage-bothering indie heroes British Sea Power take their tuba-backed tour of the same name into the studio. Decline Of... era B-side Heavenly Waters gets an almost Morricone-esque twist, while 2013's Machineries Of Joy is augmented with brass stabs. One for completists rather than casual fans. **Tom Wiggins** 

STUFF SAYS ★★★★☆



## **Mythologies**

\_Cheatahs

Consisting of four different nationalities, Cheatahs neatly reflect the melting pot of their adopted and their music is similarly cut 'n' paste. With hints of a more urgent My Bloody Valentine and hooks worthy of The Strokes, Mythologies is a fuzzladen journey through their various influences. **Tom Wiggins** 

STUFF SAYS ★★★☆☆



## THE PROMISE OF THE CHILD

# The Promise Of The Child\_Tom Toner

Hard sci-fi is all about new worlds and huge, vertiginous ideas. Even so, it's rare to come across something as original as this debut novel, set 12,000 years from now.

Humanity has branched out, diversifying into different species, from 15-foot giants to elflike pygmies. Planets have been hollowed out and lit from inside with tiny

captive stars. And some 21st-century humans are still alive, kept going by lost medical tech. Many of them have gone mad, but a few fight for control of their

dwindling empire. It's a slightly disjointed read at times, but it will leave you with a myriad of interesting questions. Will Dunn

STUFF SAYS \*\*\*\*



### Crack99 \_David Locke Hall

The true inside tale of a Chinese software pirate's takedown by US agents is made more zingy by the dodgy stuff in question being professional and/or military in nature (think software for controlling satellites, not Flight Simulator X). Despite the crisp writing, this is only for fans of real espionage and legal affairs. Fraser Macdonald

STUFF SAYS ★★★★☆



**Star Wars: The Original Topps Trading Card** Series, Volume One\_Gary Gerani

Star Wars collectables tend to be worth more than the catering budget of one of Jabba the Hutt's knees-ups. This anthology contains over 500 pages of the sought-after Topps cards and stickers. One for committed star-nerds. **Tom Wiggins** 

STUFF SAYS ★★★☆☆

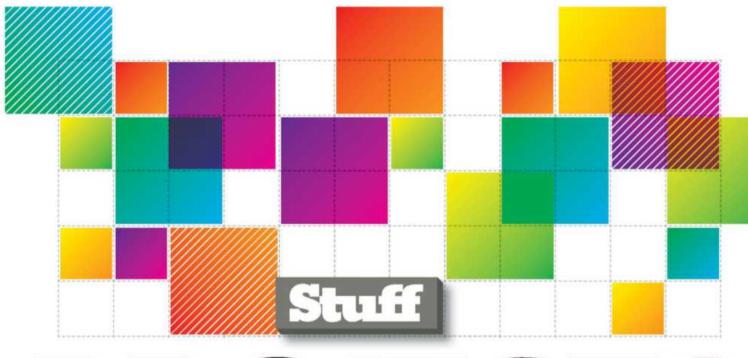
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# p120 BETA YOURSELF: MAKING iOS APPS Make that 'Airbnb

for gerbils' idea come true at last



#### p122 PLAYLIST: **SUBREDDITS**

Where to find the internet's finest orca/penguin mashups



#### p124 PLAYLIST: **ANIME**

Turning Japanese, we think we're turning Japanese, we really think so



#### p126 SUPER GEEK: **LEGO**

The appeal of the bricks, explained by a man made of yellow plastic



Ready to make that must-download you've been thinking about for three years? Michael Simmons, founder of award-winning app Fantastical 2, will help you get started

## THE BASICS

- Go analogue. A pencil, paper and your imagination are the best combination for brainstorming ideas. There are also great tools such as Prott (prottapp.com) or proto.io for prototyping on a computer, but it's hard to beat the simplicity of a blank sheet of paper.
- Apples are sweetest. All you need to get started in iOS development is a Mac. Coding doesn't take up much storage or demand a fast processor, but screen estate can be useful so if you don't need portability,



a Mac Mini or iMac will be fine. Check out Apple's refurb store for bargains.

#### ■ Choose the Xcode factor.

Use Apple's free development suite Xcode over other solutions that promise to let you run your app anywhere, such as Appcelerator or PhoneGap. It may seem more difficult at first, but it makes getting

help easier and will definitely pay off in the long run.

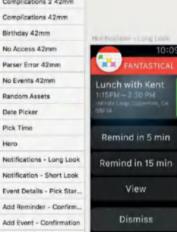
■ Aim low. When coming up with an app idea, think about a simple problem and how to solve it. You don't have to create something brand new, but you do have to be making something that interests you. It's the only way to push you through the learning obstacles.

#### ■ Don't call it Arkansas.

The app's name is very important. Make sure there are no pronunciation ambiguities and that you can easily tell someone its name. You don't want to be spelling it out every time someone asks.

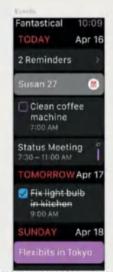








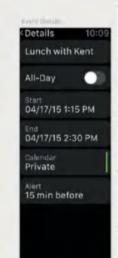




unch with John

Create Event







## LEARN THE LINGO

- **Be bilingual.** Apps can be written in two languages: Swift and Objective-C. Swift is newer, but most apps are still written in Objective-C. Learn a bit of both.
- Get stuck in. If you're going the online course route, choose one that encourages you to build apps from the start udemy.com and lynda.com both have excellent Swift courses.

#### ■ Nail the basics.

Programming skills apply everywhere. Learn the basic concepts well, as the knowledge will transfer to web design and Android development too.

0 / 42

Add Event - Keyboard

Force Touch - When you.

Force Touch





## BUILDING BLOCKS

- Get structural. Apps consist of the user interface, the pieces underneath that power the UI and the glue that holds these two together. The proper term for this is the model view controller (MVC).
- Say what? In other words: the model stores the data, the view is what the user sees (the UI) and the controller updates the model based on input (like a new event in a calendar app).
- Step back. Thinking about MVC as you design your app makes you aware of how it will all work together.



## LOOK AND FEEL

■ Learn from the master.

Look at Apple's own apps as a starting point for good design. Learn how it thinks apps should look and work, and apply those principles to your creation.

- **Be inclusive.** People have different levels of eyesight. Think about providing the ability to adjust font sizes and offering different display themes.
- **■** Experiment with colours.

There are no hard and fast rules about how many colours to use, but sites like UI Palette (uipalette.net) are good for finding combinations that work.



## ROAD TESTING..

- Take a test ride. Beta testing is essential for finding bugs and ironing out any kinks. Apple's free TestFlight is great for quick testing, but also has some limitations.
- Puck it up. An alternative is HockeyApp (hockeyapp.net), which provides not only beta testing but also crash reporting, user feedback and analytics.
- Be a travelling salesman.

Always keep two versions of your app on your iPhone (one that works and one you're working on) so you can show people and get their feedback.



#### **STACK OVERFLOW**

Developers of all types and levels of experience talk over their problems here, so it's a great place to go But be warned: it's not always newb-friendly, so make sure you check its library of over ten million programming questions to see if yours has been asked before.

dribbble

#### DRIBBBLE

Whether you're looking for logo ideas or just fancy dunking your head in a stream of visual inspiration, this show and tell' site for designers should be top of your bookmarks list. There are special deals on design software and you can even filter projects by colour hex codes to see what combinations work for your app's colour scheme.



## APP: THE HUMAN STORY

December, but this Kickstarter-funded documentary looks as if it could be the app equivalent of Indie Game: The Movie. A host of A-list developers have signed up to be involved and its website has a mix of video shorts and interesting stories written by people who have struck app gold.



# **SUBREDDITS**

Whether you're new to Reddit or you don't go a day without checking r/nintendomusic, here's the best of what lies beyond The Front Page of the Internet





#### r/EarthPorn

Before you report us for promoting some Mother Nature fetish site, we should point out that this subreddit focuses purely on pictures of the most beautiful. wondrous views of Earth. From spectacular waterfalls to caves peppered with bioluminescent algae, it's enough to infect the feeblest of agoraphobes with wanderlust





#### **Oddly Satisfying**

A perfectly colourcoded supermarket shelf. Ripping the cellophane wrap off a new gadget. Peeling back the lid of a jar of peanut butter to reveal a smooth, unbroken surface. Oddly Satisfying brings all of life's small but incredibly rewarding experiences together into a single online library of deliciously neat goodness.



#### **Artisan Videos**

This strangely relaxing subreddit is packed with footage of all sorts of amazingly skilled people who'll fill you with awe, from smiths hammering beautiful Damascus steel knives to street vendors whipping up crepes in seconds. We love cake decorating and candle carving, though we've also been known to dabble in a pottery vid or two.



#### My People **Need Me**

Describing this corner of the internet is a little tricky. It's packed with gifs of people and animals that make unexpected exits - the joke being that they have to dash because 'their people' need them. Naturally, many of its posts relate to moments of physics failure in GTA V. You'll laugh, we promise.



#### **Cool Guides**

These can teach vou all about poker hands, how to defend yourself from a dog, and the meaning of different-coloured lightsabers, all within five minutes. The information varies from pricelessly useful to mind-bogglingly useless, but you never know - one day you might have to rely on making balloon animals to survive.



#### Unresolved Mysteries

This is an archive of real-world cases that have yet to be solved. It's a little dark (murder tends to be, after all) but it's also full of fascinating reads like the 14th century's English sweating sickness, or cases of spontaneous human combustion. The real mystery is how you'll get any work done (hint: you won't).



**Hybrid Animals** The web will tell you Photoshop's main purpose is to make flaking celebs look like sex gods, but the web is wrong. The real reason is so that creatives can birth twisted (and often hilarious) animal hybrids. From the terrifying shark hippo to the eerie elephant cat, there's plenty here to both 'aww' and shudder at.





Reddit Enhancement Suite is an absolutely indispensable tool for any Redditor – it should be a crime to be without it. From keyboard shortcuts to inline image viewing and much more.



Oxford doesn't do a BSc in Cooking for the Single Life, but The University of Reddit does. There are more serious options like programming too, and a huge variety of free courses to wrap your



Hopping between your favourite subreddits can be a chore, so use this URL trick to merge them together. Simply add a '+' then the name of one or more subreddits. 'reddit. com/r/wtf+startledcats yields promising results.

#### **Ask Science**

Why does orange juice taste like mouldy hellfire straight after you've brushed your teeth? Why does your cat always wink at you – is there a dead rodent on your bed? These questions and more can be resolved here, a place that puts Reddit's many engineer, scientist and health professional brains to good use.



#### **Mechanical GIFs**

Nature is astounding, but man-made objects can be equally impressive. If you've ever wanted to see incredibly intricate watch gears twirling, or machines carrying out tasks with inhuman precision, or if you just love seeing the smooth action of a well-oiled ball bearing in motion, then this is the place for you.



#### Internet Is Beautiful

The web can make you laugh, cry, or cringe so hard that you pull a muscle. But it can also be beautiful, and that's exactly what this subreddit celebrates. It's a collection of the prettiest, most useful sites on the internet and you'll get lost for hours flying through online galaxies, beatboxing using your keyboard, and everything in between.

## Woodworking

If you're the kind of person who'll lovingly rub your hands over a perfectly fitted dovetail joint then you'll feel right at home in these sawdust-laden halls. Even if you're a complete beginner, you'll appreciate the craftsmanship on offer. Maybe one day you'll post pictures of your own polished mahogany fruit bowl..



Finished all your Nordic noir and Californian comedy? It's time to visit the strange world of Japanese anime - a place that's had more than a minor influence on western telly





#### **Attack On Titan**

Imagine Band Of Brothers but replace Nazis with grinning behemoths that feast on human flesh, and you get this bleak but compelling show. It explores the horrors of war through the eyes of three young cadets trying to liberate mankind from their oppressors. Not for the easily spooked. Netflix, Amazon Instant Video







It might be the most subdued anime here. but it's still one of the Oh, and enough blood best. Each episode is to make Kill Bill look like an allegorical vignette of the lives of ordinary Japanese people in the 19th century and manga series, Berserk their encounters with supernatural creatures known as Mushi. Its atmosphere of calm and contemplation is inexorable conclusion. strangely soothing. Netflix, crunchyroll.com



**Cowboy Bebop** If you're only going to

watch one show on this list, make it this. Consistently lauded as the greatest anime of all time, it sees director Shinichiro Watanabe overlay his wild-westin-space drama with a mighty jazz soundtrack. You'll wonder how you ever lived without space battles set to piano improv. US\$36(\$50)/ amazon.com



Puella Magi Madoka Magica

Typical 'magical girl' anime is airy with glitzy transformation scenes and hyperbolic villainy. This turns the subgenre on its head. Don't let their sweeter-than-thou appearance fool you: this story of five girls and their battle with malevolent beings known as witches is a Faustian tragedy. amazon.com



#### **Ghost In The** Shell: Stand Alone Complex

The original inspired The Matrix and took cyberpunk to new artistic levels. This is a future where humans can transfer their consciousness to machines; the digital world is as dangerous as reality. One of sci-fi's most skilfully realised universes. Netflix, Amazon Instant Video



## leon Genesis vangelion

The 'mecha' genre (giant robots having massive fights) may have inspired the Transformer films, but its manga and anime originators are a far superior breed. This show, with humanoid robots and prodigy pilots, oozes intellect.

**Berserk** One for those

who enjoy intricate

a Victorian tea party.

Based on the '90s

is reminiscent of

that gently pulls

you towards its

US\$30(\$42)/

amazon.com

slow burner

Tamburlaine – it's a

character studies.



#### Kill La Kill

Ostentatious, dripping in parody, and it has quite rightly been dubbed insane, but a couple of years ago the only name on any anime fan's lips was Kill La Kill. Why? It blends the 'faster, better, stronger' structure of 'shonen' anime with tropes from the magical girl genre, with bizarre and compelling results. Netflix

#### **Gintama**

This comedy has run for hundreds of episodes. How has it lasted so long? By being terribly funny, and terribly weird. It follows Gintoki, a samurai in Edo period Japan (which is overtaken by aliens), trying to pay the rent by doing odd jobs. It's a masterclass in comic timing. \$free / crunchyroll.com

#### Paranoia Agent

Unconnected people are being murdered by a figure known only as Shonen Bat and there are weird happenings in Tokyo. This 'magical realism' anime has a page-turning plot, but the show's purpose is to explore the minds of its cast, splattered across the screen in a wonderfully abstract fashion. Unmissable. US\$50(\$70)/ amazon.com

#### Steins; Gate

This time-travel drama sees a self-professed mad scientist and his team scramble between different times, resulting in brain-mangling plotlines. Its magic lies in its multiple layers, with seamless transitions between light and dark moods. It's also hard not to fall in love with the cast. Netflix, Amazon Instant Video



If you can't find the anime you're after on the likes of Netflix, head to **crunchyroll.com** or animaxtv.co.uk — they have hundreds of shows available to stream and, if you don't mind the adverts, will let you devour all your neart desires for free



The one thing most likely to ruin your first anime experience is bad dubbing. In general, the English dubs for anime are utterly atrocious. Never judge an anime you've watched dubbed before you've switched to subtitles, restored the original audio and tried again.



It's tempting to replicate your taste in live action when exploring anime, but there are many anime-specific genres that might tickle your tastebuds. 'Mecha' is all about giant robots, while 'slice of life' is more character-driven



Bricks magazine editor Mark Guest reveals how Lego became a pop cultural phenomenon, and why it's no longer just little kids who are clicking for joy

ccording to the webcomic XKCD, the population of Lego mini-figures will overtake that of humans by 2019. That's an incredible (and, for Legophobes, terrifying) rise from the plastic brick's humble origins in 1958. Back then it was seen as a kids' construction tov. But then came the internet. and suddenly a new breed of enthusiasts known as AFOLs (adult fans of Lego) took it to new levels of complexity.

Heft my passion for Lego behind in my late teens but, like so many AFOLs, found myself

drawn back in with the release of the Lego Star Wars sets in 1999. After building the likes of the Super Star Destroyer (all 3000 pieces of it), I started imagining how I could make scenes out of exciting ranges such as the Lone Ranger sets.

With every new annual Lego release list, the choices get wider. More and more sets are breaking the \$200 barrier, piece numbers are increasing, and some even come with display plagues and stands. Last year's Batman Tumbler vehicle from *The Dark* Knight (\$390, shop.lego.com)

came in the now not-so-rare category of 'ages 16+'

Not that it's all about locking yourself away to puzzle over the next brick-based challenge. These days, Lego shows are a regular fixture in exhibition halls. The big one this year is Brick (brickshowslive.com), which will see giant, fan-built worlds for the likes of Tomb Raider and world record attempts at the NEC and London's ExCeL in October and December respectively.

For real Lego disciples, the holy land is Lego's HQ in Billund, Denmark. Its official 'Inside Tour' tickets cost £1420(\$3045) per person and usually sell out within five minutes. But for a sense of Lego history and a family trip that you can claim is just for the kids, Denmark's Legoland is also well worth a visit.

If you want to get involved from home, the Lego Ambassador Network (lan.lego.com) will show events and groups near you. And Lego Ideas (ideas.lego.com) is a brilliant new platform for user-submitted designs that occasionally get turned into real sets. Fingers crossed for the International Space Station...



#### **■ SN**ΩT

If you're finding standard Lego bricks restrictive, Studs Not On Top' pieces let you branch out by including studs on the sides for the creation of more complex builds like curved walls.

CHEESE SLOPE Officially known as part number 50746, this handy wedge-shaped brick has a 33° slope and is one stud square, making it ideal for adding fine details such as roof tiles.

#### LUG

'Lego User Groups' are local or regional clubs that organise real-world Lego exhibitions. If you you can apply to create your own.

#### GREEBLING

The practice of adding believable mechanical details like engines and cockpits to enhance the appearance of a Lego seen in Lego Space and Mecha builds.





# TEMPLE OF AIRJITZU

Even if you haven't exactly been glued to the Ninjago TV series, the theme's new flagship set looks destined to be a Lego classic for all ages. For older collectors, the village has a few tricky build techniques and dozens of neat touches like the bridge and spinning shadow theatre. But there's also lots of playability for kids and the generous inclusion of 12 minifigures, including six ninjas. This alone guarantees its inclusion on lots of people's Christmas lists; and with over 2000 pieces, it's a serious building project that could stretch well into the new year.

\$400 / lego.com



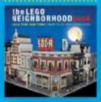
#### HAUNTED HOUSE

It might sound unfair to call a set released in 2012 'retro', but the Haunted House was part of a very short-lived theme called Monster Fighters that was on shelves for only 10 months. The theme's sets have shown a tendency to appreciate in value and this one's scale and level of detail (plus its glow-in-the-dark ghosts) make it very desirable for collectors. It has many playable features but the real AFOL appeal is its ability to fit within the modular town range - and all those lovely sand green bricks. To find a 'brand new in box' one now for under £250(\$500) would be considered a good find.

from £270(\$580) / ebay.co.uk

# BUILDING BLOCKS BRICKSET THE WEBSITE BRICKSET AN encyclopaedic

An encyclopaedic reference for all levels of collectors, Brickset is the biggest and best unofficial Lego news site. Beyond its news feed, user-generated reviews and forums, there's an automated Amazon 'bot that tells you which sets have been discounted by 25% or more — handy for last—minute gifts or bargain—hunting, brickset com



THE 800K THE LEGO NETGHBORHOOD BOD

Got a decent-sized spare room and a penchant for urban planning? This guide to building your own Lego town includes instructions for creating multi-storey buildings as well as ideas for interior design. See also the inspirational *The Lego Architect*.

E13(\$28) / amazor



## **SLAVE1**

This iconic craft from the *Star Wars* universe has been released in set form four times before, but never at this scale. The 45cm-long ship is part of Lego's Ultimate Collector Series (UCS), which means it comes with a display stand and a staggering level of detail. This includes a carbonite-imprisoned Han Solo for storing in the cargo hold, a rotating cockpit, stacks of hidden guns and missiles for hunting fugitives and a new, ornate Boba Fett minifigure. Older UCS sets like the 2008 Death Star or last year's Sandcrawler might be more tempting, but this is an essential piece for any collector's library.

\$330 / lego.com

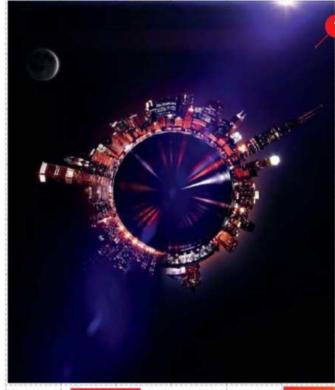


THE DOCUMENTARY
THE SECRET
WORLD OF LEGO

WORLD OF LEGO
This insightful (if stage-managed) peek inside Lego's HQ reveals the brick-making process and cult-like atmosphere. The shadowing of a UK design student who's looking to land his dream job adds a compelling narrative to a film that could have only scratched the plastic surface. channel4.com

# 9 5-MINUTE HACKS

# IF NOTHING ELSE, AT LEAST...



If all you can remember from GCSE German is the translation for Black Forest gateau, fear not – Windows 10's new Skype update is here to make you fluent in seven different languages:

On your Windows 10 machine, log into Skype. Now choose your contact, before selecting their language from the drop-down menu.

Check that the globe icon next to the settings wheel is highlighted. This shows that Skype Translator is on. Now start your video chat by clicking on the camera icon.

Using a headset will help Skype to give you the most accurate near-instant translations. As you speak, you'll get a translation in your headphones and on screen. Hello, real-world Babel fish.

It's your party, and you can invite people via a GIF of robots falling over if you want to. Here's the faster alternative to laboriously drafting a witty invite email:

Download FLYR (\$free, iOS). Search for your party's theme in the lower box. This is a front-end client for Giphy.com, which is basically the Amazon of amusing (and free) GIFs.

If you want to import your own photo or video, press the camera icon. Once you've confirmed the background, add your event's name, date and location.

Now tap the paper aeroplane symbol and send it out over Instagram, text or WhatsApp. Disclaimer: Stuff hasn't confirmed a roboparty for 2029 in Detroit, but we're not ruling it out either.

# 1MAKEA MINIATURE PLANET

It's never been easier to turn your panoramas into little marble-like worlds that probably already exist in some strange parallel universe (we like to think). Here's how to make one...

...on your iPhone. The excellent Circular+ (\$2.58, iOS) not only helps you make 'little planets' thanks to effects like lens flares; it also does an invert effect for psychedelic album covers.

#### ...on your Android phone.

Spherify (\$free, Android) takes your existing panoramas and crunches them into small worlds, before serving up a gallery of your physics-defying creations.

...on your computer. A bit trickier, but using GIMP (\$free, gimp.org) import your 360° panorama, stretch it into a perfect square, rotate 180° and apply 'Polar Coords' in the filters menu.

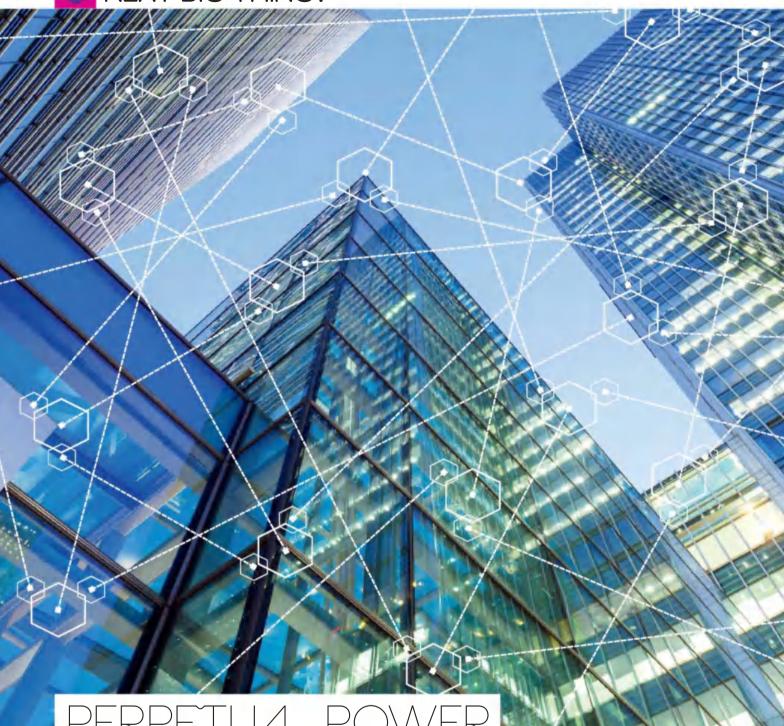




#### TUNE IN NEXT MONTH TO...

Upgrade your winter sports gear Uline up your action figures Eliminate boredom on cross-country car journeys





aybe they could look into getting my phone to last the day first...
Poor you, walking around with a pocket-sized portal to more info than you can read in a thousand lifetimes, and it only lasts 12 hours. Still, if news from Drayson Technologies is to be believed, you might be able to stop worrying. Their new energy—harvesting tech apparently grabs power from thin air.

### Didn't Tesla already try this (and fail)?

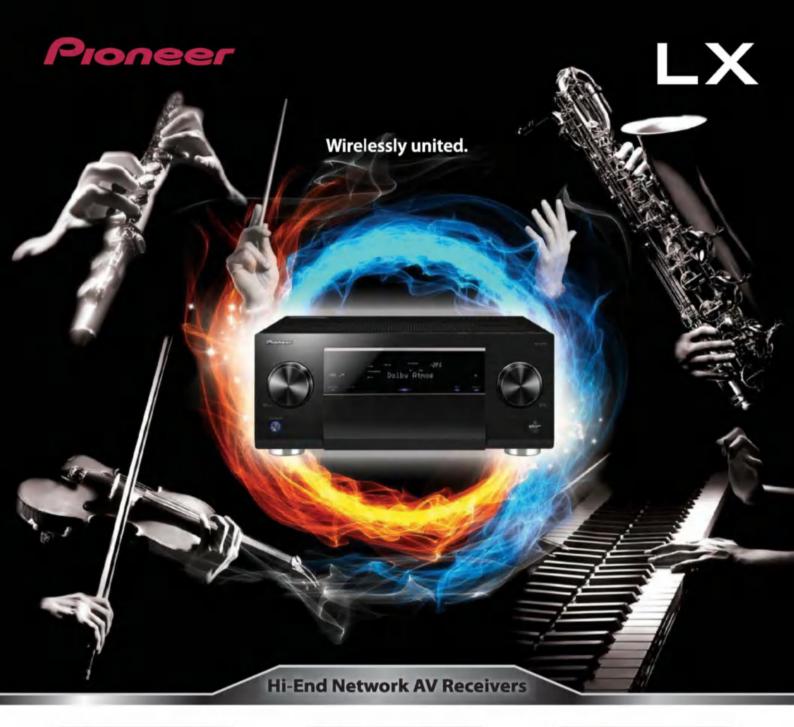
Nikola Tesla, that is, not Elon Musk, and sort of but not really. In the early 20th century,

the genius sparkwizard planned to broadcast wireless electricity from giant towers. Drayson's new Freevolt tech, on the other hand, makes use of the energy that's already being beamed all around us. The space around us is awash with untapped ambient power. Freevolt harvesters (which consist of an antenna, rectifier and power module) can harvest ambient RF energy from digital TV broadcasts, Wi-Fi and mobile signals. The collected power can then be used to perpetually power devices without ever having to charge them or faff around with batteries. Clever, eh?

#### Excellent, so my next phone will live forever?

Not quite. The power generated by the Freevolt system is minuscule, and won't be enough to power an energy-sucking smartphone. The first device to use the tech, the CleanSpace Tag [£55(\$115), our.clean.space] is far simpler. It's a mini sensor that measures and maps the air quality around you, and is completely powered by surrounding radio waves. This could be the first step towards potentially larger devices like watches topping themselves up over time. Fast for ward to perpetually powered wearables, and we've got ourselves a game-changer.

Words Esat Dedezade





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9.2-Channel High Fidelity Class D Network AV Receiver



SC-LX59

SRP: \$2199 w/gst

Max. Power: 240w x 9ch (Class D)

9.2-Channel High Fidelity Class D Network AV Receiver





































\* not available for SC-LXSS



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